

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

AIR CONDITIONING FOREIGN TRAVEL

Carrier Portable Air Conditioners give maximum results at minimum cost, produced by the pioneer and leader in air conditioning. We need one additional young man for foreign travel to appoint Dealers and completely organize sales and service program each country. Should be real business man with record of results. Knowledge of Spanish desirable. Do not telephone. For interview, mail complete history to Mr. Laube.

CARRIER CORPORATION
NEWARK, N. J.

A LEADING MANUFACTURER of beverage and beverage-food coolers, specializing in this field alone, has an exceptional opportunity for several unusual district sales managers. No salaries—strictly a generous commission arrangement in protected territories. Able men, qualified to present an interesting sales proposition to aggressive distributors, supervise their operation and formulate consistent sales policies and who can support themselves during a reasonable breaking-in period, will have in return valuable franchise with all cooperation of the manufacturing organization. Obviously, this ad is directed to a very limited group of men. Write us in detail, giving your full experience in detail and confidence to E. W. Jones, Refrigeration Division, PORTABLE EVAPORATOR MFG. CO., Bloomington, Ill.

FOUR CARRIER air conditioning dealers in midwestern states need experienced commercial refrigeration men to manage commercial refrigeration sales department. Salary plus commission and bonus. Please write stating experience, qualifications, and references. Box 966, Air Conditioning and Refrigeration News.

EXPERIENCED sales promotion man and statistician for jobber of household electrical appliances sold through dealers. Box 972, Air Conditioning and Refrigeration News.

FRANCHISE WANTED

EXPORT SPECIALISTS solicit accounts of manufacturers interested in exploiting foreign markets for their products on a commission basis. Great interest being shown abroad in air conditioning equipment, refrigeration, controls, self-contained room coolers, household refrigerators, etc. Box 969, Air Conditioning and Refrigeration News.

FRANCHISES AVAILABLE

ARCOIL OIL BURNER distributors and dealers wanted for our 1937 model burners and boiler burner units. New low prices. Neat, compact, sturdy in design. Operates with the heavier fuel oils which contain more heat units. Write for literature and territory open in your locality. NATIONAL ARCOIL CORP., Newark, N. J.

COMMERCIAL DEALERS to sell our complete line of display cases, refrigerators, walk-in coolers, etc. We manufacture equipment of all sizes. Sell with your present line of machines or with our line of compressors if desired. Attractive dealer's discount with financing arrangement for your sales. Write for full information. H. EHRLICH & SONS MFG. CO., Station D, St. Joseph, Mo.

AIR CONDITIONER manufacturer specializing in cabinet type, room conditioners of highest quality containing several exclusive and superior features, seeks two or three additional distributors of proper standing. Product has exceptional merit and is of latest design. A real air conditioner that will outperform most competitive makes. Box 965, Air Conditioning and Refrigeration News.

BUSINESS OPPORTUNITY

WELL ESTABLISHED refrigerator and general household appliance business, retail and wholesale. All leading lines, making money. Good live city, prosperous farming country. No crop failures. Will sell all or part interest. No real estate, low rent. Owner wishes to retire. Box 968, Air Conditioning and Refrigeration News.

EQUIPMENT WANTED

SURPLUS STOCKS, complete electric refrigerators, laundry equipment, radios. Specify year of manufacture; description, lowest price F.O.B. Chicago, Illinois; and if in original packing. Address replies Box 971, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

SERVICEMEN AND DEALERS save money. Buy "used as is" refrigerators. Spray and recondition them yourself. Kelvinators \$14.00 up; Frigidaires \$15.00 up; Copelands \$15.00; Bohns \$15.00; General Electrics \$19.00; Majestics \$15.00; Electrolux \$25.00; others \$10.00. Closeout 1936 Stewart-Warner at 50% discount. PILGRIM REFRIGERATION CO., 45-33 56th St., Woodside, Long Island, N. Y.

CONDENSING UNITS—Water cooled. Made by Servel specially for small, self contained air conditioning cabinets. $\frac{1}{2}$ H.P.—6900 BTU's with latest improve-

ments. Must dispose of an overstock of 25 immediately. Price of \$58.00 each or \$55.00 if entire unsold balance taken at once. THERMAL COMPANY, INC., 2434 University Ave., St. Paul, Minn.

WE HAVE ON HAND brand new, in original crates, several Larkin vacuum plate coils 7" and 16" wide and 80", 104" and 128" long which we offer at from $\frac{1}{4}$ to $\frac{1}{2}$ of list price and subject to prior sale. We solicit your inquiry by wire, phone, or letter. A real bargain is offered in this type of coil for anyone interested. HOLCOMB & HOKE MFG. CO., 1545 Van Buren St., Indianapolis, Ind.

CARTER RUST PREVENTATIVE, 135 gallons. Make offer for lot. REFRIGERATION SUPPLY CO., 1612 14th St., N.W., Washington, D. C.

REPAIR SERVICE

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halelectric can repair it. Service prompt, prices right, guarantee reliable. HALELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types, \$1.75. General Electric, Cutler-Hammer, Tag, Penn, Ranco box types, \$2.00. Bishop Babcock, Majestic, Penn magnetic switches, \$2.50. Each control individually calibrated to factory specifications. UNITED SPEEDOMETER REPAIR CO., INC., 436 West 57th St., New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

List Topics for Food Preservation Meeting

(Concluded from Page 1, Column 3)

partment of Agriculture—"Effect of Low Temperatures on Enzymes."

Dr. M. Piettre, director of the Institut International du Froid, Paris—"Crystallization and Desiccation of Certain Proteids at Low Temperature."

Dr. D. K. Tressler, chief in research; R. Jenkins, New York State Experiment Station; and G. A. Fitzgerald, chief chemist, Frosted Foods Corp.—"The Vitamin C Content of Vegetables, and the Effect of Processing for Quick Freezing."

Mr. Fitzgerald and Prof. C. R. Fellers, Massachusetts State College—"The Vitamin A and C Content of Quick-Frozen Fruits and Vegetables."

Prof. S. C. Prescott, dean of science, Massachusetts Institute of Technology, will preside over the afternoon session, at which the following speakers will be heard:

Prof. Prescott—"Certain Microbiological Aspects of Frozen and Refrigerated Foods."

Dr. Plank—"The Measurement of the Heat to Be Abstracted in Cooling and Freezing Foodstuffs."

Louis Berube, commissioner of maritime fisheries, Quebec—"Modern Practice in Preservation of Fish by Cold."

Prof. B. E. Proctor, M.I.T.—"Determination of Optimum Conditions for Domestic Refrigeration of Foods."

Prof. A. W. Ewell, Worcester Polytechnic Institute, Worcester, Mass.—"The Utilization of Ozone in Refrigeration."

Prof. James Holt, M.I.T.—"Air Conditioning for Food Plants."

The first day of the conference, which is sponsored by the department of biology and public health of the Massachusetts Institute of Technology, will be devoted to miscellaneous food industries, the second day to the subject of food canning, and the fourth day to morning round table discussions.

Persons engaged or interested in the refrigeration industry are invited to attend the conference. Those attending are required to make application and register in advance.

Distributor Host to Indiana Dealers

EVANSVILLE, Ind. — Refrigerating Equipment Corp., Indianapolis distributor, was host to Frigidaire dealers of Southern Indiana at a sales meeting held here recently.

Conducting the meeting were Earl Spriggs, Frigidaire zone manager, and C. R. Kopp, Frigidaire sales department, both from Dayton, and the following representatives of the distributorship: Clark Wheeler, general manager; F. B. Tucker, division manager; and D. L. Lichtenwalter, advertising manager.

Bristol, Conn. Ordinance Requires Licensing Of All House-to-House Salesmen

BRISTOL, Conn. — An ordinance placing all types of house-to-house salesmen under city regulation by requiring them to register with the city clerk before doing any sort of selling work, went into effect here last week.

The ordinance is said to be even broader, in some respects, than the famed Green River, Wyo., ordinance, which prohibited peddlers from calling at a home for the purpose of soliciting or selling unless invited to do so by the occupant.

First section of the Bristol ordinance requires registration with the city clerk and payment of a fee of 25 cents. The city clerk, unless "good cause is shown why such applicant should be refused," then issues a badge, good for the rest of the calendar year, which the salesman must wear.

Registrations may be revoked for cause, and a fine of \$25 is provided for violations, with each day of unregistered operation constituting a separate offense.

Sponsored by the Bristol chamber of commerce, the ordinance's passage brought a storm of protest from local business men, who were told that all of their salesmen would be required to register and wear the canvasser's button.

Broad phraseology of the law makes it applicable to traveling salesmen who call only upon business houses, as well as house-to-house vendors, this phrase of the ordinance reading "engaged for any purpose of

trade . . ." The Green River law, while placing a virtual ban on house-to-house solicitation, applies only to private homes.

The law does not apply to collectors for insurance companies, but otherwise there appear to be no exceptions. Even newsboys, if they solicit new customers, are required to wear the registration button. Main purpose of the law, according to secretary Louis A. Wheeler of the chamber of commerce, is to "keep tab" on out-of-town canvassers.

Aberdeen, S. D. Rescinds Anti-Peddler Law

ABERDEEN, S. D.—At the request of more than 15% of the city's legal voters, city commissioners of Aberdeen have rescinded the so-called "Green River" anti-peddler ordinance, which had been in effect a little over a month.

In an effort to strike out against fly-by-night hucksters with doubtful wares, the city heads had ruled out all house-to-house solicitation in Aberdeen, except at the express invitation of the housewife.

Efforts to enforce the measure, however, brought a storm of protest from residents, in which the newspapers and the Aberdeen Civic Association joined. Faced with these two protesting forces, the city commissioners repealed the ordinance without delay.

2 Special 1938 Models Introduced by S-W

(Concluded from Page 1, Column 1)

Smaller model, known as Special Model 550, has a net capacity of 5.64 cu. ft. and a shelf area of 11.3 sq. ft. It is 55½ inches high, 23¾ inches wide, and 23½ inches deep. The larger model, Special Model 770, has a net capacity of 6.3 cu. ft. and a shelf area of 13.9 sq. ft., and is 58½ inches high, 28¾ inches wide, and 23½ inches deep.

Equipment in both models includes 11-point cold control dial, safety zone temperature control, porcelain evaporator with reversible door, glass chilling tray, interior electric light, chromium-finish hardware, and Stewart-Warner's "slo-cycle" twin-cylinder compressor.

Ice cube capacity in both models is the same, four ice trays making 96 cubes or 8 lbs. of ice per freezing.

Westinghouse Official In Canada Dies

HAMILTON, Ont.—George Robert Kerr, for many years treasurer and recently a vice president of the Canadian Westinghouse Co., Ltd. died at his home here Aug. 13.

Mr. Kerr joined the Westinghouse staff in November, 1902, and a year later was transferred to the Canadian Westinghouse Co. He became accountant in 1914 and assistant treasurer in 1918. In December of that year he was appointed treasurer and general accountant, and in August, 1928, became vice president.

EXPANSION VALVES in BULLOCK'S NEW AIR CONDITIONING SYSTEM . . .

BULLOCK'S DEPARTMENT STORE
Los Angeles, California



Go to Your Jobber For Your A-P Controls . .

In the largest Air Conditioning Installations in the Country, as well as in the smaller ones, you'll find A-P Valves invariably specified.

Refrigeration and Air Conditioning experts know that every A-P Expansion Valve must prove over and over again, before it leaves the factory, its leakproof construction, its accuracy under extreme conditions, its dependability.

To install A-P Controls of any kind is always definite assurance of satisfactory operation—a satisfied user.

Progressive Jobbers Everywhere
Stock A-P Controls



No. 220 K
Expansion Valve



No. 70-NA
Solenoid



No. 7B
Solenoid

A-P Expansion Valves shown on section of Air Conditioning unit installed by Western Air & Refrigeration, Inc., Los Angeles, California.



AUTOMATIC PRODUCTS COMPANY
2450 NORTH THIRTY — SECOND STREET
MILWAUKEE WISCONSIN

REFRIGERATION NEWS

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News
Member Audit Bureau of Circulations. Member Associated Business Papers.

VOL. 22, NO. 2, SERIAL NO. 442
ISSUED EVERY WEDNESDAY

Entered as second-class
matter Aug. 1, 1927

DETROIT, MICHIGAN, SEPTEMBER 8, 1937

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Business News Pub. Co.

FOUR DOLLARS PER YEAR
TWENTY CENTS PER COPY

Further Hearing To Be Held on Chicago Code

Retail Council Opposes Act's Passage Without Public Hearing

CHICAGO—In response to protests against the City Council's passage, on Aug. 5 and without a public hearing, of the revised Chicago ordinance governing refrigerating systems and cooling plants, Mayor Edward J. Kelly on Aug. 31 referred the measure to the Committee on Health for a public hearing to be held probably some time during September.

Mayor Kelly's move was a last-minute one, for the measure would otherwise have become law on that day.

Leading the opposition to passage of the ordinance without public hearing was the Cook County Retail Council of which Walter A. Knoop is managing director. It was also understood that other associations, representing florists, grocers, butchers, and others, had asked for an opportunity to be heard before the statute was placed on the city's list of laws.

Officials of the Department for the
(Concluded on Page 20, Column 1)

Uniform Price-Fixing Contract Drafted for Philadelphia Dealers

PHILADELPHIA — A "sample" contract for the establishing of fixed resale prices with dealers under the Pennsylvania Fair Trade Practice Act has been released to electrical appliance distributors by the Electrical Association of Philadelphia.

The association secured the services of Attorney General William A. Schnader, one of the sponsors of the Pennsylvania Fair Trade Act, to formulate the proposed agreement in an effort to simplify the problem of dealers who may be dealing with a number of distributors, so as to lessen the possibility of having a variety of agreements in operation
(Concluded on Page 2, Column 4)

Kansas City Household Sales 2% behind 1936

KANSAS CITY—Sales of household electric refrigerators during the first seven months of this year were 2% behind the same period of 1936, according to reports by distributors and dealers to the Electric and Radio Association of Kansas City.

This record is not disappointing, says G. W. Weston, secretary-manager of the association, in view of the city's high saturation mark, cool spring and summer weather, and decreased buying due to strikes and labor trouble. Success of the spring refrigerator campaign kept the decrease from being considerably larger, he says.

Ralph C. Cameron Heads Kelvinator Appliance Sales

DETROIT—Ralph C. Cameron has been appointed household appliance sales manager in charge of domestic refrigerators, electric ranges and water heaters, washing machines, and ironers of the Kelvinator division of Nash-Kelvinator Corp., it was announced last week by Henry W. Burritt, vice president in charge of sales.

Mr. Cameron comes to Kelvinator from the General Electric Co., where he has been assistant manager of all specialty appliance sales.

This addition to Kelvinator's executive staff has been made to keep pace with augmented activities in the household appliance field, Mr. Burritt said in making the announcement. Each of the household appliances under Mr. Cameron's direction will continue in the immediate charge of its present sales manager.

Mr. Cameron has had a background of wide experience in the appliance field, and is well known throughout the industry. For the past 10 years, he has been active in the merchandising of appliances for General Electric.

Starting as the operator of retail appliance stores, he was later called upon to handle distributorships of major specialty appliances. His duties expanded to include all phases of sales activities, including sales planning, merchandising, sales promotion, and field meetings.



RALPH C. CAMERON

Bert Natkin Reports Debut of 'Air Conditioning Widow' Amid Tulsa's Sweltering Summer Days

TULSA, Okla.—The "air-conditioning widow," worthy successor to the "golf widow" of earlier days, made her debut here this summer, according to a tall tale received from the Tulsa World via Bert Natkin, of Natkin Co., distributor of Westinghouse air conditioning in this territory.

Following is a quotation from the Tulsa World submitted by Mr. Natkin:

"Rumor has it that some Tulsa

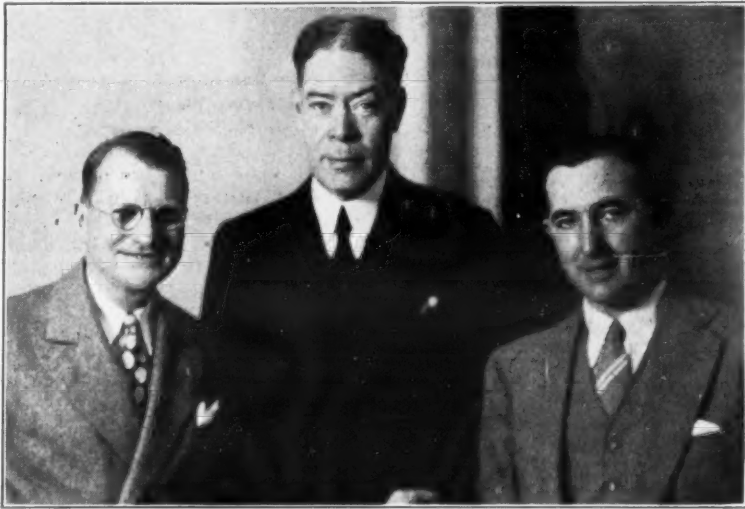
men are finding their newly air-conditioned offices so comfortable that their wives can't lure them back home.

"You'll pardon us, we hope, if we admit eavesdropping today on a telephone conversation between a sweltering stay-at-home wife and her nicely air-conditioned husband.

"The wife's talking:
"Hello, dear. How are you today—comfortable?"

(Concluded on Page 2, Column 1)

Convention Time Is Getting Near



Meeting last week in Chicago to discuss association affairs and to ready plans for the annual conventions in November were (left to right) Sam R. Bush, executive secretary of the National Refrigeration Supply Jobbers Association; R. M. McClure, executive secretary of the Refrigeration Supplies and Parts Manufacturers Association; and R. H. Spangler, head of The Spangler Co. in St. Louis and president of the jobbers.

Jobbers to Discuss Organization Change At Nov. Convention

CHICAGO—Officers of National Refrigeration Supply Jobbers' Association held a two-day meeting last week to discuss plans for the association's annual convention, scheduled for Nov. 1 and 2 in the Stevens hotel. President R. H. Spangler presided over the conference.

Tentative plans call for a meeting of the association's board of directors a day or two in advance of the convention's opening. By means of this meeting, the board members hope to dispose of all routine business matters so that they may devote their full time to the convention.

Committee members, or at least committee chairmen, probably will be invited to meet with the board during its pre-convention sessions to discuss their respective activities and proposed recommendations. The board also proposes to reserve ample time during these sessions to hear from any present or prospective members on matters which these individuals may desire to present.

Requests for such audiences should be addressed to Samuel R. Bush, executive secretary of the association, well in advance of the meetings.

(Concluded on Page 13, Column 2)

Thompson to Direct Westinghouse Sales Through Utilities

MANSFIELD—Walter Thompson has been appointed director of utility sales in the merchandising division of Westinghouse Electric & Mfg. Co., according to an announcement by R. E. Imhoff, merchandising division sales manager.

In his new position, Mr. Thompson will have general supervision of all utility sales work for the merchandising division.

Joining the R.C.A. Radiotron Co., Inc., Harrison, N. J., in 1930 as manager of sales operations, Mr. Thompson was made district manager of the combined R.C.A. Radiotron Co. and E. T. Cunningham, Inc. in 1933. In 1934 he was appointed eastern sales manager of the R.C.A. Mfg. Co., Radiotron division, from which connection he came to Westinghouse.

Wildermuth Postpones Price Contract Action

NEW YORK CITY—A. E. Wildermuth, Inc., local Kelvinator distributor, has temporarily discontinued the plan announced three weeks ago to establish retail resale prices on refrigerators under the Feld-Crawford law, according to R. Hoeffler, company official.

The move was prompted by the request and suggestions of dealers at a meeting of the Brooklyn Dealers' Association that the plan be dropped since similar prices on other lines had not been established and the plan would create a sales disadvantage for Kelvinator dealers, Mr. Hoeffler said.

With the introduction of the new line late this fall, at which time many of the controversies may be settled, the plan probably will be inaugurated, he stated.

Servel Prepares To Supply Parts Through Jobbers

Independent Jobbers to Handle Household and Commercial Parts

EVANSVILLE, Ind.—The electric refrigeration and air-conditioning division of Servel, Inc. has completed plans for the distribution of its replacement parts for current and obsolete electric household and commercial refrigeration equipment through selected independent refrigeration supply jobbers in various cities, in addition to its existing distributing organization, according to an announcement made by P. B. Reed, service manager.

According to Mr. Reed, the management—after considering the move for some time—came to the conclusion that the distribution of parts through the independent jobber should be advantageous to all concerned, because of the following reasons:

1. To the user, because of the ready availability of the part for emergency replacement.
2. To the independent service firm and even the equipment distributor on occasion, in having at hand (at the jobber's) an adequate stock of parts, thus relieving both of them of carrying large stocks to meet sudden demands.

(Concluded on Page 13, Column 2)

Cleveland League to Hold Mart & Clinic

CLEVELAND—Sponsored by the Electrical League of Cleveland, an electrical merchandise mart and clinic in which manufacturers, distributors, and wholesalers of major electrical appliances will take part, will be held Sept. 14-17 in the Hotel Cleveland.

Expected to attract between 1,000 and 2,000 buyers, dealers, and salesmen, the project is the first cooperative centralized display of electrical merchandise held in the city.

At the clinical session which the league is staging Sept. 15 at 4 p.m., nationally known speakers are scheduled to address dealers following the merchandising clinic. The league will be host to dealers at a dinner
(Concluded on Page 2, Column 3)

New Firm to Distribute Grunow in Pittsburgh

PITTSBURGH—A new company, to be known as the Pitt Appliance Co., has been formed to distribute Grunow products in the Pittsburgh area. The territory formerly was served by a branch of General Household Utilities Co.

The new company is headed by J. P. Miller, who was formerly in charge of the branch office, and who has been associated with Grunow interests for the past several years.

Dr. Rudolph Plank, German Refrigeration Authority, Tours American Plants



(1) Dr. Rudolph Plank of Karlsruhe Institute, Germany, plumbs the wit of F. O. Jordan, air-conditioning editor of the News, following a luncheon at the Wardell. (2) W. G. von Meyer of Copeland has just asked Dr. Plank a puzzler, and (3) Victor Smith of Sunbeam is taking his turn. (4) F. M. Cockrell drives Dr. Plank over to inspect the Detroit Lubricator factory.

Visiting German Scientist Consults with Detroit Refrigeration Men



(1) F. M. Cockrell and (2) Dan Wile of Detroit Lubricator welcome Dr. Plank to Detroit. (3) George F. Taubeneck, editor of the News, and Dr. Plank recall their meeting at the Seventh International Congress of Refrigeration at The Hague, Holland. (4) K. M. Newcum shows his Master Service Manual to the noted German scientist. (See also picture on page 1, and article on page 9, which recounts Dr. Plank's activities in this country, as well as some of his achievements in refrigeration research.)

'Home Was Never Like This,' Is Air-Cooled Husband's Only Answer to Despairing Wife

(Concluded from Page 1, Column 3)

"Well, that's fine. You say they have the temperature up to 70 today? That's good. I was really worried. Your nose actually looked frost-bitten the last time I saw you."

"Oh, we're just fine, too. The thermometer only shows 105 here in the living room. I don't think it will go beyond 110."

"Junior looks peaked, though. The doctor thinks he should go away where it's cooler. So I was thinking—why don't you let me send him down to the office tomorrow? The change would do him good. He could take his hammer and nail set and play there quietly while you work."

"The ironing worries me, too, I

can't seem to finish it in this heat. Do you mind if I leave it and let you finish it down there where it's so nice and cool? You wouldn't have time? Oh, well—you said you were so much more efficient since the place is air conditioned."

"What's that? You don't think you'll be home for a while anyway?"

"Oh, I see. Well, I wouldn't want you to run any risks with your health. I know that you've become conditioned to that atmosphere. Coming out must be a severe shock."

"Yes, I'll mail you some warmer clothes. I'll send your heavy underwear—I do want you to be careful to stay warm enough."

"Call us occasionally. I promise

not to report any more outside temperature readings. I don't want to distress you."

"No, I don't think I'll be too lonesome. I'll try to keep busy. But Junior and I will be looking forward to seeing you sometime in December. Goodbye, darling —"

"The wife falters, turns away from the telephone and swoons with the heat."

Breakfast Series Pushes Cleveland Range Drive

(Concluded from Page 1, Column 5) following the clinical session. Jimmie Gheen will be featured speaker.

A two-month electric range drive initiated by the Electrical League Sept. 1 at a breakfast rally attended by 249 dealers and salesmen, is

expected to draw added patronage to the show.

Repeating the initiating breakfast rally, a series of similar meetings at which range specialists from manufacturing companies will be speakers, is part of the drive program.

W. T. Christy, general manager of the General Electric Co.'s range division, spoke at the second breakfast meeting Sept. 7.

Pierre Miles, Kelvinator range manager, will speak before the breakfast group Sept. 21. Opening morning of the mart, Sept. 14, George A. Hughes of Edison General Electric Appliance Corp. will speak.

Sample Philadelphia Contract Avoids N. Y. Trade-in Controversy

(Concluded from Page 1, Column 1) simultaneously, and to guarantee the formation of a legally sound contract.

The form evolved will be recommended to distributors but they will not be obliged to accept it, according to George Conover, managing director of the Electric Association.

While the sample contract provides for a maximum trade-in allowance, the dealer is permitted to exceed the maximum upon the evaluation of the trade-in and approval by the distributor.

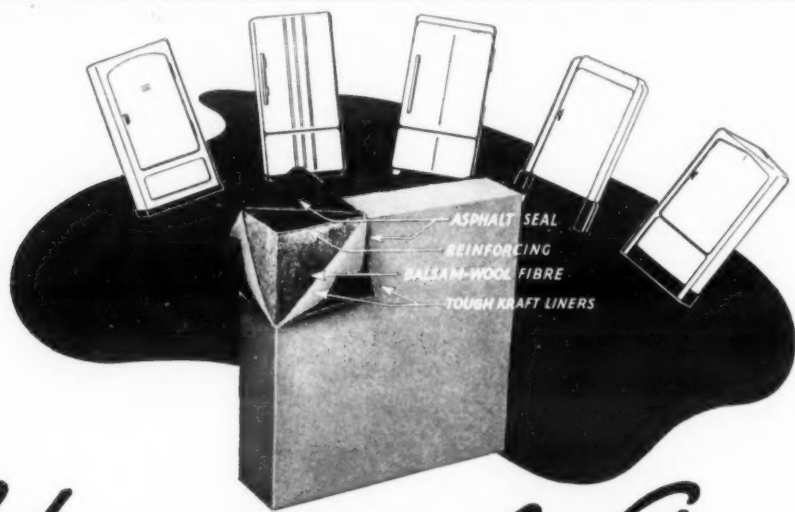
The "fixed versus the reasonable allowance" controversy in New York will not be paralleled under the fixed allowance agreements of the Electrical Association of Philadelphia, according to Mr. Conover.

Following is the association's trade-in allowance clause:

"The retailer agrees not to give to any purchaser of merchandise a trade-in allowance on any article, and not to purchase or repurchase any article in anticipation of a sale of merchandise, unless such article is listed in the trade-in allowance schedules annexed hereto and made part hereof of any modification

thereof which may be established by distributor and communicated in writing to the retailer; and under no circumstances to allow to any purchaser more than the maximum trade-in allowance specified in the current trade-in allowance schedules unless the article offered as a trade-in has an actual market value in excess of such allowance and distributor has for that reason approved a higher allowance."

In New York contracts containing a fixed maximum trade-in allowance, the allowance is based on the purchase price of the new machine and no consideration is given to the actual value of the set to be traded in. The contracts offering a "reasonable allowance" authorize that the allowance "should be based on the reasonable value of the set to be traded in."



Universal Acceptance

because It's Fundamentally RIGHT

● When one insulation has demonstrated superiority in more than 3,000,000 refrigerators, you can be sure it's the RIGHT refrigerator insulation. And that's exactly the record which Balsam-Wool Fibre Sealed Slabs have established. In every type of refrigerator, in all parts of the world, the Balsam-Wool insulation products have received the public stamp of approval for quality and efficiency.

Balsam-Wool Fibre Sealed Slab, in itself, is an ideal refrigerator insulation. It is odorless and sanitary . . . moistureproof . . . non-settling . . . permanent and high in efficiency.

Balsam-Wool Fibre Sealed Slabs are economical to use. This type insulation offers enormous advantages of fabrication in each refrigerator plant . . . according to individual specifications and requirements . . . thus saving overhead and inventory costs. Let us give you the facts about Balsam-Wool Fibre Sealed Slabs. Write us today for full details.

WOOD CONVERSION COMPANY

Refrigeration Sales Division • 360 N. Michigan Ave., Chicago, Illinois
St. Paul, Minn. • New York, N. Y.

BALSAM-WOOL FIBRE SLABS
PRODUCT OF  WEYERHAEUSER



... easy to cut, bend or flare, saves time and a lot of cussing. YOUR JOBBER HAS IT.

WOLVERINE TUBE COMPANY
1411 CENTRAL AVE. DETROIT, MICH.



ALL-AMERICA CHOICE FOR THE REFRIGERANT TEAM

ANSUL CHEMICAL COMPANY

MARINETTE ♦ ♦ ♦ ♦ WISCONSIN

You'll make
more money
with
C. I. T.

C. I. T. BUSINESS BUILDER

The localized
national
finance
service

SEPTEMBER

Prepared by C. I. T. Corporation, unit of Commercial Investment Trust Corporation, capital and surplus over \$100,000,000

1937

Three Essentials in Finance Company Service Besides that of Financial Stability, Dealers Find

C. I. T. Stands High in Estimation of Retail Trade Because of Consumer Acceptance, Experience, and Quick, Efficient Service

BYOND the basic requirement of financial stability and conservative management, how greatly does it matter whether you give your financing business to one finance company or another? This question, put to leading retailers in various sections of the country recently, brought forth surprising unanimity of replies.

Consumer Confidence

The type of finance service employed has a decided bearing on the success of the retailer, most dealers believe. Consumer confidence, what the public thinks about a dealer's finance company, is of prime importance. "I have known many people who refused to buy unless the sale could be financed through the finance company of their choice," said one retailer. "A number of customers have asked me, 'Do you offer the C. I. T. Budget Plan?' I shifted my business because of these buyer requests. C. I. T. advertises to the public and the average person knows about C. I. T. service and usually is favorable to it."

Experience a Vital Factor

Most dealers realize that financing

is a highly specialized field. It is better, many of them feel, to entrust instalment purchases to a firm that has had long experience in that field. The record of C. I. T. is an unusual one. For almost thirty years, this company has pioneered in the field of sales financing. Millions of contracts have been handled and every conceivable kind of situation has been met. Upon the basis of this accumulated experience, C. I. T. is able to analyze your prospective customer's situation to the satisfaction of all three parties concerned: the customer, the retailer and the finance company.

Service an Important Item

Quick, thorough, efficient yet friendly credit investigations are a third factor in aiding the retailer to make a success of his business, dealers agree. No matter how unusual the transaction, the dealer should be able to call up his finance company and receive accurate and dependable advice without delay. C. I. T. local office staffs are highly trained to handle all phases of the purchaser-finance company relationship in such a way as to maintain dealer-purchaser good will.



Washington Dealer Increases Sales 100%

To one Washington, D. C., dealer, "which finance company" does make a decided difference—one hundred per cent, in fact! He writes:—"You are no doubt aware of the very competitive condition surrounding the sales and financing of home appliances in the District of Columbia and vicinity.

Help to Customers

"As we have been very favorably impressed by your methods of investigating credits and collecting

accounts, we believe it to be to the purchaser's advantage, as well as our own, to finance sales through C. I. T. To emphasize the confidence that we have in your concern, we feel it our duty to inform the purchaser that through months of financing through C. I. T., the tact and speed used in investigating credits and the courtesy extended to customers on collections and time extensions when the purchaser is in difficulty, has been a tremendous advantage to us in not only increasing our sales but in satisfying all classes of our customers.

"These services have not been found in any competitive finance plan, and although our purchasers have the right to decide for themselves, we recommend the C. I. T. service.

"Due to your cooperation in handling this important phase of our business, we have been able to increase the sales of refrigerators more than 100% over the preceding year."



The Philosophy of
DEALER DAN

No one likes to be told he's wrong. When repairing a refrigerator or radio or other appliance, it's easy to belittle the customer's choice in the hope of making a replacement sale. Remember that, at the time of the purchase, the customer *thought* he was making the best choice. Praise some feature of the appliance. Work into the subject of obsolescence by discussing some radical improvement made recently on the same brand. Sales psychology? Rather, that's just plain common sense!

A survey recently indicated that, out of over one hundred first-class retail salesmen of kitchen ranges, well over 60% actually *knew how to cook!* The moral of this is obvious—it is the man who has a really intimate, first-hand knowledge of his line that makes the ace salesman—for he can talk to buyers with sympathy for their needs.

SHOW HER THAT SHORTER TERMS ARE TO HER ADVANTAGE—by Westcott



Standard Down Payments and Shorter Maturities

The great family of appliance dealers who finance through C. I. T. received a few weeks ago suggestions for encouraging standard down payments and somewhat shorter maturities. The outline of terms effective as of September 1st, was sent them in a letter from C. I. T. Corporation, signed by A. O. Dietz, President.

The communication from C. I. T. pointed out that during the years of economic readjustment growing out of the depression, finance companies revised their down payments and credit terms so that dealers might continue to sell to their budget buying market which had suffered diminished income. This policy embraced not only the household appliance and radio field but the

automobile industry as well.

The new terms provide for maximum maturity of 30 months on ranges, refrigerators, and on water heaters. Appliances entitled to 24 months maximum maturity include ironing machines, space heaters, washing machines, and commercial refrigeration equipment. Purchases entitled to 18 months maximum maturity include vacuum cleaners and radios. Down payments will be 10% of the cash installed price, with a minimum of \$5.00.

The letter emphasized the fact that it is to the dealer's advantage to establish substantial interest in the equipment for the purchaser at the time of sale, and to insure satisfied ownership of the equipment during its early life.

C. I. T. CORPORATION • NEW YORK • CHICAGO • SAN FRANCISCO

ADVERTISEMENT

SPECIALTY SELLING IDEAS

Capital Group Backs Sales Training Series

WASHINGTON, D. C.—To teach salesmen more about "selling the use" of household electric appliances, the Electric Institute of Washington will conduct a series of evening training classes this fall for the appliance sales personnel of department and specialty stores.

First series, beginning Sept. 27, will be conducted for the personnel of the city's five large department stores. Classes will be run on an eight-weeks' basis, one meeting weekly, at Institute headquarters here. After the department store course is completed, a second series of classes will be held for the salesmen of specialty dealers.

Aim of the training courses will be to instruct salesmen in the art of placing before the prospective purchaser uses of an electric appliance that may never before have occurred to her. No particular product will be singled out for demonstration purposes, since the Institute maintains an attitude of impartiality toward all appliance manufacturers.

Awards will be made to salesmen showing the best knowledge of the training courses given—not, however, on the basis of any increase in sales which follow attendance at the training sessions.

'After-Sale Selling' Ups Dealer's Profits

SEATTLE, Wash.—An "after-sale-selling" policy on electrical appliances is proving valuable for MacDougal & Southwick, dealership here, in establishing good will relations with customers, selling them added appliances, and obtaining new prospects.

Call-backs to "re-sell" purchasers the day after a sale is made, is the store's policy. The salesman must go over again all the selling points of the newly installed appliances. This reawakens the owner's enthusiasm and refreshes her understanding on how to get maximum satisfaction from her new purchase, the dealer believes.

Chief advantages gained from the plan, according to MacDougal & Southwick, are that it establishes a lasting personal relationship between salesman and customer; offers an opportunity for selling another appliance; and provides an occasion for obtaining new prospect names.

If the salesman cannot make a personal call, he telephones.

A friendly visit or phone call, a tip on how to operate the new equipment, and a courteous offer of assistance should any questions arise, will make firm friends and develop many leads for future prospects, the dealer has found.

Puzzle Featured in Newspaper Promotion Brings in \$10,000 Business in 6 Days

By Winifred B. Hughes

HAMTRAMCK, Mich.—When Dave's Radio Shop, located in the middle of Detroit's Polish settlement, sold \$10,000 worth of merchandise in six days after it had instituted a recent promotion contest, the Fink brothers, who head the firm, decided to use the promotion in their Port Huron store, and later in the Flint outlet.

Plan for the contest, which was devised by the Automatic Washer Co. and is copyrighted, consists in featuring a puzzle in newspaper advertising in which the winners are offered as first prize an \$89.50 Automatic washer, and secondary prizes of credit drafts towards the purchase of specified appliances.

"It's a very simple contest," Jack Fink told us, drawing a diagram consisting of four intersected lines with the center space containing a 7. "The contestant must fill in the diagram with numbers so that each of the four corners will add to 21."

The puzzle, highlighted in 30-inch advertisements in two community papers, the New Deal and the Hamtramck Citizen, brought in 1,000 entries during the week that it ran. A committee consisting of Hamtramck's mayor, superintendent of schools, and judges, picked the winners. Novelty and neatness of presenting the puzzle answer were considerations in awarding prizes.

"Every person who submitted an answer was mailed a letter in which we congratulated him on winning a

credit award of either \$40 on the price of a Stewart-Warner Model 867 refrigerator, or \$25 on the purchase price of a Stewart-Warner Model 887 Fink said.

"That made everyone a winner. Every child was just as good a prospect as an adult, because anyone who worked the puzzle would get this letter saying that he had won the award, and asking him to come down and buy the appliance on which the credit draft applied."

The results—\$10,000 in refrigerator and radio sales—speak for the success of the campaign.

"We started a similar contest in our Port Huron Appliance shop on Aug. 20, and had 1,200 entries by Aug. 26, although the contest didn't close until Aug. 28," Mr. Fink said.

The contest has magic-wanded the August "dog days" for this firm and has doubled the total sales for the season, as compared with last year's spring and summer sales.

Five salesmen are employed by the shop, and a large part of their business is floor traffic sales—in fact, only one of the men works on outside canvassing, according to Mr. Fink.

Spot radio broadcasts over stations WJBK and WMBC remind appliance shoppers to buy at "Dave's" on a seasonal program that is stopped during the months of June, July, and August. Three trailers, one at each of the stores, are also used to get rural sales, Mr. Fink stated.

Refrigerator Displays in Food Stores Build Sales For T. Eaton Co., Canadian Dept. Store

WINNIPEG, Manitoba, Canada—Food stores offer a productive field for refrigeration sales by the appliance department of the T. Eaton Co., Ltd., reports H. L. Westman, manager.

Distributor of Frigidaire electric and Coolerator ice refrigerators, the store displays one model of each in grocery stores located in previously neglected sales territory. A salesman who lives in the district nearby the store selected is employed, brought to Winnipeg, and given 10 days sales training before he takes on his assignment.

The plan is worked out to encourage sales wide-awakeness on the part of the store owner, the manager, and the refrigerator salesman. The store receives the retail sales profit, the store manager a small overwriting, and the salesman a commission and drawing account. The salesman is given a free hand in

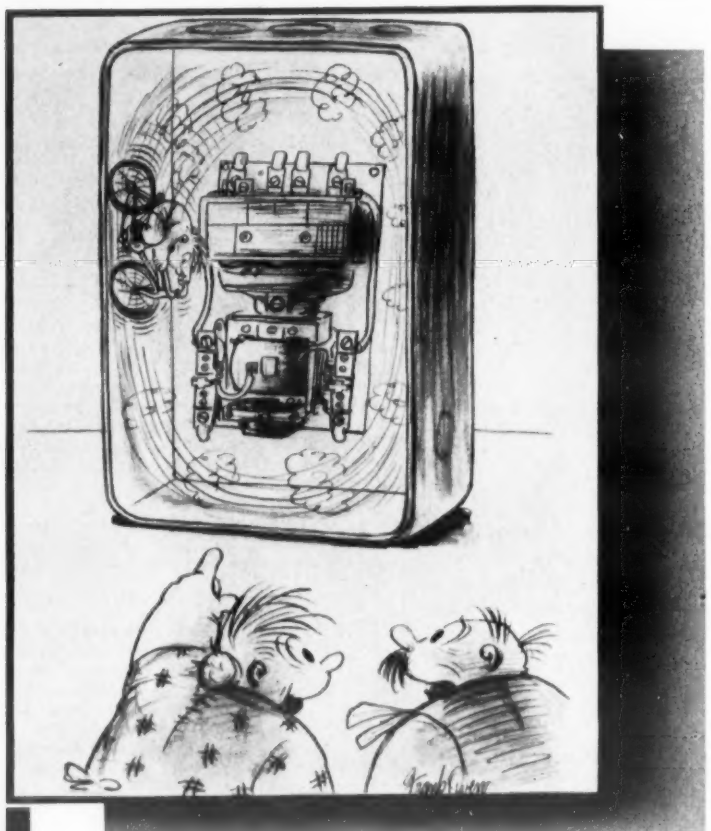
developing his own promotion campaigns.

"Because the over-writing allotted the store manager keeps him alert for leads, the salesman can make outside calls with the assurance that leads will be handled in his absence," says Mr. Westman.

"We have found a promising field in the store tieup because we get store traffic and close association of food with refrigeration," he adds. "The salesman has an ideal place in which to explain the merit of proper food refrigeration."

Dealer Handles 1,000 Crosleys

HOUSTON, Tex.—More than 1,000 electric refrigerators have been sold or rented by Finger Furniture & Radio Co., Crosley dealer here, during the past seven months, store officials assert.



"Just because there's lots of room, Philbert wants to be a daredevil!"

There is only one starter in which Philbert could do his stunting—that's the Allen-Bradley solenoid starter. No other starter has such generous wiring space.

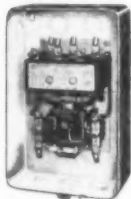
Despite its compactness, the Allen-Bradley solenoid starter is unusually rugged. It has a minimum of wearing parts. Its double break, silver alloy contacts never require filing or dressing.

Allen-Bradley offers a complete line of air conditioning and refrigeration motor control. Write for "The Story of the Solenoid Starter."

Allen-Bradley Co.

1313 S. First St., Milwaukee, Wis.

Bulletin 709 solenoid starter for across-the-line squirrel-cage motors.



Send for—"The Story of the Solenoid Starter"



ALLEN-BRADLEY
SOLENOID MOTOR CONTROL



For years before anyone ever heard the term "air conditioning", the Standard Caramel Co. of Lancaster, Pa., had been using Frick Refrigeration for controlling temperature and humidity in two large work rooms (each 84x55x13½ ft.). . . One of many Frick installations made a generation or more ago that are still doing satisfactory air conditioning for process work and human comfort . . . You get the benefit of this longer experience when you specify Frick Refrigeration for air conditioning.

DEPENDABLE REFRIGERATION SINCE 1882
FRICK Co.
WAYNESBORO, PENNA. U.S.A.

Book Review

Three Forces in Specialty Selling Outlined in Book

"How to Make People Buy Specialties." Author: John Maratta. Publisher: Council for the Improvement of Specialty Selling, New York City. Pages: 41. Price: \$1. Review by Winifred B. Hughes.

That there are only three forces by which you can quickly change people's opinions and influence them to buy—demonstration, illustration, and conversation—is the theme developed in "How to Make People Buy Specialties," first publication issued by the Council for the Improvement of Specialty Selling.

In clear, understandable terms, for the most part devoid of inspirational dressing up, the author discusses each of the three important factors, and, to use his own words, covers "the handful of bare essentials" necessary to successful specialty selling technique.

Typical of the rules which the author sets up are: "Carry with you as much demonstrating equipment as you can cart. Fill your kit with things the customer can feel, play with, put together, take apart, and understand."

"Start your sales presentation by handing the prospect something. This diverts his attention from you and centers it on the object for sale."

Demonstration, the book points out, provides the specialty salesman with the most telling method possible for answering standard objections—for convincing the prospect that he should buy something that he doesn't think he wants.

Specialty salesmen to whom canvassing is a haphazard door-bell ringing grind are offered a simple formula to make this important volume-building activity both pleasant and profitable.

The method suggested is to pick a specified number of names each week, and to prepare the way for a call by a four-piece mail campaign.

Each unit of the series should contain a postage-stamp size picture, or a shouting-type sized signature of the salesman. The author indicates the steps which should follow-up this preparation in canvassing.

Two pages of questions concluding the booklet provide the reader with a gauge for determining how much of its subject matter has been added to his own information.

A short, concise compilation of facts, presented in simple words, this publication, "How to Make People Buy Specialties," contains tips for both the novice who finds sledding tough, and the veteran specialty salesman.

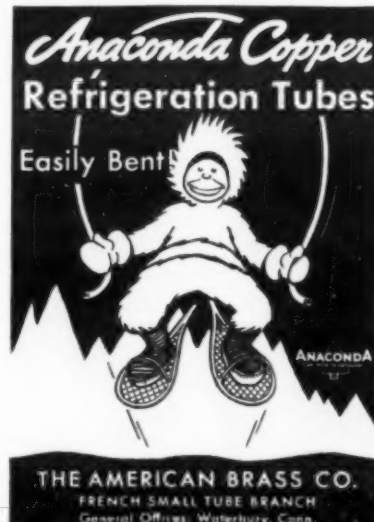
3 Smart Girls & Dealer Use Talents to Advertise F-M

LONGVIEW, Tex.—Three smart girls and one smart dealer combined recently to give Fairbanks-Morse a novel bit of advertising.

The movie, "Three Smart Girls," was scheduled to play the Rita theater in Longview. Shoults & Harper, local Fairbanks-Morse dealer, working in cooperation with the theater, ran a newspaper advertisement in theatrical style, showing pictures of Deanna Durbin and other members of the cast surrounding a Fairbanks-Morse refrigerator and radio.

The same idea was carried out in a lobby display, with radio and refrigerator shown.

In both instances, the cost was shared by the theater and dealer.



50 J. W. Greene Co. Salesmen Awarded Baseball Trip

DETROIT—Fifty salesmen from the territory of the J. W. Greene Co., Toledo, Ohio, Westinghouse distributor, were guests of the company on an all-day, all-expense trip to Detroit Sept. 3 as winners in the organization's annual August Baseball sales contest.

The men, ranked highest during the month in the territories of Field Men H. F. "Hi" Heyman, Don Alkire, Charlie Dawson, and Sales Manager Tom Mason, had lunch at Joe Nebiolo's Cafe, Melvindale, saw the Detroit-Chicago baseball game in the afternoon, and had dinner in Webster Hall hotel.

Trip-winners from Mr. Heyman's territory were:

L. J. Wissler and O. E. Neeley, Findlay, Ohio; Earl Creviston, Robert Lewis, and L. Beanblossom, Lima; Dick Pollock, Van Wert; W. C. Chester, Tiffin; Frank Gilmore, St. Mary's; Herb Gordon and Chet Weiss, Monroe, Mich.; W. J. Fruth and Harry Spooner, Fostoria, Ohio; Chas. Potts and E. J. Meinke, Fremont; Luther Walters, Ridgeville Corners; L. A. Witter, Fremont; R. M. Hays, Celina; Harry Merrill, Wauseon; Burt Diebel, Bronson, Mich.; J. F. Thompson, Coldwater, Mich.; H. L. Everhart, Bryan; and W. A. North, Kenton.

From Mr. Alkire's territory, the trip-winners were:

Raymond Dishong, Deshler; D. O. Bentley, Wayne; G. L. Gripton, Britton, Mich.; Mr. Houser, Rockford; H. E. Kuhlman, Elmore; Paul Kaemming, Woodville; E. J. Mulligan, Oak Harbor; and Sol Hirsch, Gibsonburg.

Making the trip as winners from Mr. Dawson's territory were:

H. H. Seligman, Toledo; C. S. Saunders, Toledo; Clair Cooley, Toledo; Andy Krasucki, Toledo; and A. Stark, Erie, Mich.

Toledo salesmen, winners in Mr. Mason's territory, were:

Bill Gregg, Len Gray, Mr. Collins, Mr. Scheff, Pat Patterson, Chuck Copeland, A. Harman, R. D. Spitzer, Ed Hartline, A. B. McCoy, Mr. Norris, Mr. Showell, Mr. Lawton, Mr. Bottinger, Mr. Morris, Mr. Ryan, Mr. Honafus, and Jerry Lajiness.

Hurley Transfers Eastern Headquarters to Newark

CHICAGO—To cultivate more intensively the Atlantic seaboard territory, the Hurley Machine division of Electric Household Utilities Corp. here has transferred its eastern sales, service, and warehouse headquarters to Newark, and designated Philadelphia as a factory branch.

The company manufactures the Thor lines of electric washers, ironers, vacuum cleaners, and ventilating fans.

Newark headquarters have been opened in the Lehigh Terminal building. Orr E. Crites is the newly appointed eastern sales manager. He was formerly merchandising manager of the Portland Electric Power Co., Portland, Ore.

T. L. Calkins, formerly of the New York office, will direct operations in the Philadelphia territory, with headquarters in the Terminal Commerce building.

Kansas City Drive Results In 103 Range Sales

KANSAS CITY—The first cooperative campaign on electric ranges, conducted here during May, June, and July, resulted in 103 sales by distributors and dealers alone, according to reports to the Electric and Radio Association of Kansas City, sponsor of the drive.

4-H Club Girls Demonstrate Electrolux at Fair

CHEYENNE, Wyo.—Forbes Music Co. sponsored a demonstration of a Servel Electrolux kerosene refrigerator by 4-H Club girls at the Laramie County fair held at Pine Bluffs, Wyo.

Electric Tuning Is Feature of New Crosley Radio

CINCINNATI — Crosley Radio Corp. has introduced a new radio model, the Dynatrol 11, featuring electric tuning in an all-wave 11-tube receiver with a range from 525 to 22,000 kilocycles.

The chassis has a local distance switch on the I-F system. It has a variable tone control with tone compensation on volume control for additional bass response. Dial is of the gold reflector Mirro type. The chassis has 10 watts output.

Cabinet is of hand-rubbed walnut, and is 40 inches high, 24½ inches wide, and 12½ inches deep. The tuning device is powered by an impulse motor instead of the conventional motor mechanism.

Dial pointer on the Dynatrol 11 stops immediately upon release of the electric tuning knob, and does not coast, it is claimed.

Additional tuning aid is the use of magnifying crystals under which are placed round pieces of paper with station call letters upon them. These magnifying glasses, eight in all, may be spaced around the dial escutcheon to show immediately the position of the user's eight favorite radio stations.

Kelvinator Opens Detroit Demonstration Kitchen

DETROIT—A new and completely equipped demonstration kitchen for the use of dealers and members of the field force was opened recently at the Kelvinator factory sales branch at 4809 Woodward Ave. here, under the direction of R. W. Walsh, branch manager.

The kitchen forms a part of a new Kelvinator air-conditioned auditorium seating approximately 60 persons. Together with the auditorium, it will provide dealers with a centrally located place for demonstrations to electric range and refrigerator prospects.

Weekly demonstration service will be instituted, and a full-time economist will be placed in charge of the kitchen, according to Mr. Walsh.

Buffalo Distributor Plays Host to 500 at Picnic

BUFFALO — Appliance Wholesalers, Inc., was host to 500 dealers in Kelvinator and Philco products and their guests at an all-day outing held Aug. 25 at Edgewater Park, Grand Island. Eight New York and three Pennsylvania counties were represented. The day's program featured a number of athletic events.

W. E. Henning, president of Appliance Wholesalers, was general chairman. He was assisted by Sam Phelps, eastern division manager; Howard Milligan, sales manager; and Arthur F. Schultz, district manager.

C.I.T. Plans New Offices In Three States

NEW YORK CITY—C. I. T. Corp. will open branch offices in Fayetteville, N. C., Johnstown, Pa., and Midland, Tex., during September.

During August, the company opened offices in Corpus Christi, Tex., Quincy, Ill., Long Beach, Calif., Green Bay, Wis., El Dorado, Ark., Flint, Mich., and Edmonton, Alberta, Canada.

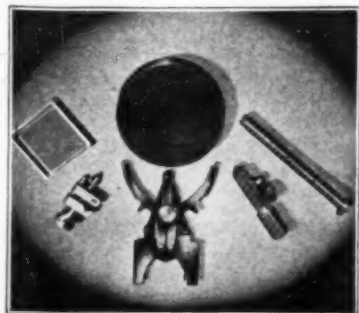
Thermo Valves
Expansion Valves
High Pressure Float Valves
Low Pressure Float Switches
Magnetic Stop Valves



PERFECTION Service Tools are Certified to Excel

Ask for catalog covering complete line of Service Tools, Condensing Water Regulators, Compressor Parts, Valves and Fittings.

PERFECTION REFRIGERATION PARTS CO. HARVEY, ILLINOIS



F-M Outlet Reports Alaskan Apartment Field Active

TACOMA, Wash.—That apartment houses are becoming an important factor in the Alaskan refrigeration market is indicated by reports from Hunt & Mottet Co., local Fairbanks-Morse outlet.

This organization reports that 11 model "D" Conservadors recently were sold by Anchorage Commercial Co., Anchorage, Alaska, for use in an apartment building, and that Paul Palfy, full-line Fairbanks-Morse

dealer at Fairbanks, Alaska, installed seven units of the same type in a new apartment owned by Milo Hajdukovich.

Fi. Worth Electrolux Dealers Permit No-Money-Down Sales

FORT WORTH, Tex. — Servel Electrolux dealers in this area are permitting purchasers to buy refrigerators without a down payment, according to a sales plan announced by R. T. Oldham, manager of the appliance department of the

Generator Service Co., distributor in this territory for Servel Electrolux gas refrigerators.

In addition, the firms are offering a Delco radio, a Mix-Master mixer, a 12-inch oscillating electric fan or a Humphrey gas heater in exchange for the purchaser's old ice box.

Dealers participating in the sales program are:

Lone Star Gas Co., the Fair Store, Mac Garvin Co., Inc., Swan Hunter, and Hilliard's Furniture Co., all in Fort Worth; Arlington Radio Shop, Arlington, and the Martin Farmall Implement Co., Mansfield.

SHELL AND TUBE CONDENSERS OF LARGE CAPACITY CONTRIBUTE TO BRUNNER'S OVER-ALL EFFICIENCY



Model W-1500
CONDENSING UNIT
Water Cooled

Brunner engineering has a reputation for effectively "gearing" design to service conditions. The Shell and Tube condensers of the large water-cooled Brunner units (7½ H.P. and over) illustrate this point. For in the larger installations, necessarily subjected to more severe demands, extra precautions must be taken to insure long range dependability... Brunner Shell and Tube condensers offer greater efficiency in this type of service; and due to the low pressure drop of both refrigerant and water (together with oversize connections) power consumption is appreciably lowered. Shell and Tube condensers are also easier to clean... are more attractive in appearance... and due to their extra weight and lower center of gravity, vibration is reduced to a minimum. Greater storage capacity for the refrigerant is also afforded, should it be necessary to pump down the system... But why not let us explain further? Send for the new Brunner Refrigerating Equipment Catalog describing Brunner units—air and water cooled—for installations ranging from 100 lbs. to 15 tons of refrigeration. Brunner Manufacturing Co., Utica, N. Y., U. S. A.

BRUNNER

BUILDS FOR *Greater* DEPENDABILITY

COMMERCIAL REFRIGERATION

How Modern Refrigeration Builds Profits for the Meat Dealer Described by McLaughlin

By C. D. McLaughlin, Commercial Refrigerator Applications Department, Kelvinator Division, Nash-Kelvinator Corp.

THE present evolution of meat merchandising display has its beginning just about the time that mechanical refrigeration became the vogue. Some of you remember the cold marble slab first used to display meat. This was very unreliable and unsanitary. Then came the ice box enclosed in glass. Next came the top display rear bunker type of case. This latter was used only a few months each year and would not keep meats over night.

Next development was the salt and ice case. The cost of refrigeration rapidly mounted with the use of salt and ice and this hurried the development of machine refrigeration. The shape of the case underwent rapid changes until, today, you see the latest modern designs, beautiful in appearance and more useful and efficient than ever.

There is a definite reason for each and every step taken in this development. Perhaps you wonder why it took so long to bring these designs to their present state of perfection. Just remember this. It took two years or more from the time the first automobiles were made to eliminate the buggy whip socket from the automobile.

CASE DEVELOPMENT

The history of the development of display cases for refrigeration of meats has followed a similar cycle. As your demands and our knowledge of the problems involved have increased we have been able to present to you more useful and profitable fixture equipment.

What is refrigeration? Refrigeration is simply the controlled removal of heat. We take this heat from a confined space, as a refrigerator walk-in cooler or display case, in order to obtain a lower temperature level in that space.

HEAT FLOW

The law governing heat flow is very simple. Heat flows from the warmer to the colder temperature level—always. In other words, it flows downhill just like water.

Perhaps you have never thought of it in that light—that the outside temperature of the refrigerated fixtures is really at the top of the hill and the temperature inside the refrigerator is part way down the hill. The cooling unit temperature may be considered as at the foot of the hill and the heat passes into the refrigerator on the way downhill.

If the hill is steep, the movement is fast. When the road levels off the movement is slow; or it may

even actually come to rest on the level ground. Some of you who have purchased refrigeration equipment of insufficient capacity, after looking at your electric bills have perhaps thought of it as a rolling stone that gathers no moss.

Too cold a store temperature will upset the normal cycling of any refrigerating system and if the action is too pronounced the meat will become slippery. Today we can actually control the proper refrigeration temperatures at much lower store temperatures.

PROPER BALANCE

Unless the proper balance is maintained between the heat outside and the cold inside the refrigerator in relation to the cooling unit temperature, we cannot control the circulation of the air or regulate the refrigerator temperature within close enough limits.

When the differential is less than 20° F. it is difficult to maintain sufficient running time to keep the meat from becoming too moist and slippery. At the same time we must have sufficient capacity to meet the maximum or peak demand.

HEAT AND WORK

What is heat? We define heat as a form of energy. That means that it is a form of work. We must put work in to get work out. Our electric motor acts thus on the refrigerant.

Work is done in maintaining a difference of temperature or heat level. The fundamental condition of Nature is a state of equilibrium or balance. That means no work is being done.

When we unbalance a force we do work upon it. Take this piece of rubber I have in my mind. Its natural state of equilibrium is when no effort is made to stretch it. The more we stretch it the more work we do upon it. When we store up energy in the rubber by stretching it it tries to return to a state of equilibrium and the more work we do the faster will it return to a state of rest when the force is released.

CONTROLLING HEAT FLOW

That is exactly the way heat is moving in your refrigeration equipment. The greater the difference in temperature level between the inside and the outside of your refrigeration equipment, the faster will the heat want to flow into it.

It is necessary to control this speed. We do this with insulation, baffles, etc. The speed when thus controlled may be regulated so that the cooling unit and the condensing unit can remove heat from the inside of the refrigerator as fast as it is allowed to enter.

There is one rule we must follow in Nature. That is balance. We can have too much insulation or we may have too little insulation.

BALANCE NECESSARY

If there is an excess of insulation the heat cannot flow fast enough to give us the proper circulation. The result is a slippery or moist condition of the meat and consequently spoilage.

If the insulation is insufficient we

Ammunition for the Commercial Refrigeration Salesman

C. D. McLaughlin, engineer in the commercial applications department of Kelvinator division of Nash-Kelvinator Corp., has been termed "the man who has taught more salesmen more about refrigeration than any other man in the industry." His "rubber band" method of teaching the principles of refrigeration, and his "mirror" method of demonstrating the nature of humidity are well known.

In his address before the recent annual convention of the National Association of Meat Retailers, Mr. McLaughlin not only gave a simple and very usable discussion of the principles of modern refrigeration, but he presented a clear and forceful sales argument for the installation of modern refrigeration equipment in the meat market. Any commercial refrigeration salesman can put it to good use.

will have too rapid a circulation with a consequent drying out of the product.

The cooling unit should be balanced to the heat load that requires removal. Then we balance the condensing unit to the heat load that the cooling unit is picking up.

You need to buy refrigeration as intelligently as you purchase meat. You have a balanced assortment to meet all demands. You should be able to keep any surplus left over the end of the day or week from spoiling during the period of little or no demand. You must plan and buy to balance your sales.

REFRIGERATION EARNINGS

Consider the investment of \$1,000 in refrigeration equipment. What is the fundamental point to consider?

How much will that \$1,000 earn for you?

If we gave the use of that money to the banker in normal times he would give us approximately 4% interest. It is still our money but we have lost control of it because we did not know how to make it work and earn money for us. He does. He gets 6% interest on the use of your \$1,000. Thus he earns \$60 per year but he only gives you \$40 per annum. He keeps 50% as much as he passes on to you. That is a big percentage return. He takes no risks and suffers no losses.

If you were to put this same \$1,000 in the safety deposit vault the banker would not pay any interest whatsoever. He would even charge you a rental for the space occupied. Why? Because money is only valuable when it is working or being spent.

50% RETURNS

The refrigeration machine which you buy and for which you spend money must also work for you. The more efficiently it works the more return you will get on your investment. It has been proved many many times that a good efficient refrigeration machine will return you more than 50% per annum when properly balanced and an exact selection has been made to fit your requirements.

Thus you see that money must be working for you if you are to make a profit. You know that in your own business the more money you invest in products that have a rapid turn-

over the more profit will you make.

In business doing an annual volume of \$30,000 gross and of which the gross business in staples was \$12,000 the average turn-over of the staples was 12 times. This was the average condition of business the past year. The gross profit averaged 20%.

PROFITS IN PERISHABLES

During the same period the average turn-over in perishable products was 114 times and the gross profits averaged 40%. The gross volume of the perishables was \$18,000. From this you can figure how profitable it is to sell meats and other perishable products.

Thirty-five cents of every dollar spent is used to buy meat. It is a very perishable item and needs to be properly refrigerated. The profit in meat—this 40%—is sufficient to pay for the cost of good refrigeration equipment and still have a satisfactory balance for yourself. And—unless you have good reliable refrigeration you cannot hope to realize the full profit possibilities.

SHRINKAGE CUT

With old style equipment the packers lost from 12 to 17% in shrinkage. With new and modern methods of refrigeration they have reduced these losses to approximately 4 to 5%. This means that they are able to retain more moisture in the meat until it is delivered to you.

With the old style bare pipe coils in your market refrigerators we kept a temperature of 36° F. and maintained a relative humidity of 40 to 50%. This meant a shrinkage loss in your store of at least 6% even after the preshrinking done in the packing house.

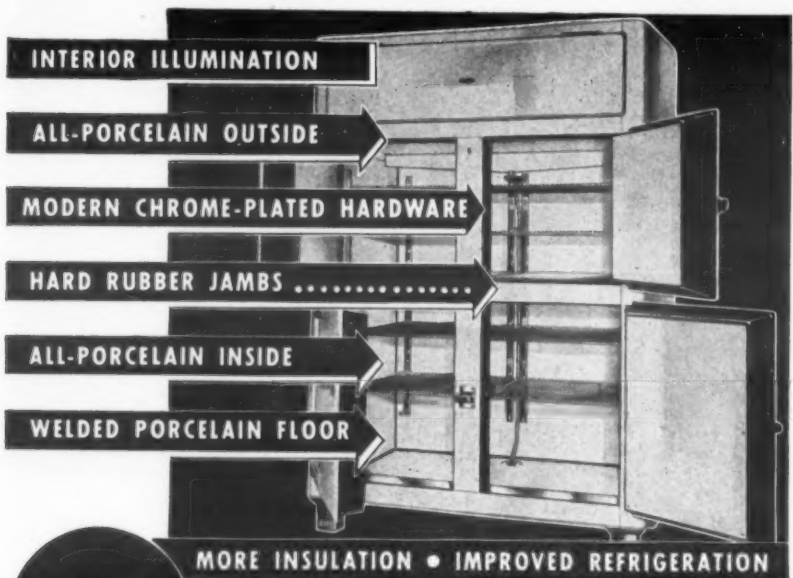
With our latest type cooling units we have been able to reduce these losses to approximately 2%. Thus the moisture in the meat you buy is still there when you sell it and there is very little shrinkage loss.

On every 100 lbs. of meat you merchandise this means a saving of approximately 4 lbs per hundred-weight. This amounts to a saving of some 80 pounds of meat for every 2,000 lbs. of meat you buy.

If your turn-over comes to this amount per week it would result in (Concluded on Page 7, Column 1)



Anaconda Copper
REFRIGERATION TUBES
Unusually Soft!
THE AMERICAN BRASS CO.
FRENCH SMALL TUBE Branch
General Offices: Waterbury, Conn.



INTERIOR ILLUMINATION
ALL-PORCELAIN OUTSIDE
MODERN CHROME-PLATED HARDWARE
HARD RUBBER JAMBS
ALL-PORCELAIN INSIDE
WELDED PORCELAIN FLOOR
MORE INSULATION • IMPROVED REFRIGERATION

Hill for those **BEST**
Hard commercial use in hot kitchens makes the best Reach-in Refrigerator the most economical—the least costly to operate, the longest lived, and the most convenient. That is why Hill Reach-in Refrigerators are easier to sell to hotels, restaurants, hospitals, institutions and bakeries.

● Send for 32-page illustrated catalog, using your business letterhead.

HILL PRODUCTS DIVISION
C. V. HILL & CO., INC., TRENTON, N. J.

In Air Conditioning

YOU CAN ALWAYS DEPEND ON CURTIS



● Curtis engineering created the patented "Centro-Ring" system of positive pressure oiling with no wearing parts. Curtis designing includes

1. Timken Tapered Roller Main Bearings
2. Water jacketed compressor heads and cylinders
3. Drop forged heat-treated crank-shafts and rods
4. Built-in oil separator with automatic return and automatic water valves
5. Precision manufacture throughout the entire unit

86 Air Conditioning units in the complete Curtis line from 1 ton to 30 tons.

Represented in Canada by
Canadian Curtis Refrigeration Co., Ltd.
20 George St., Hamilton, Ontario

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Co.
1912 KIENLEN AVE. ST. LOUIS, MO.

More and more, with the growing demand for air conditioning, dealers and engineers alike are realizing the built-in quality of Curtis products which guarantees efficient, economical, carefree performance. There is a Curtis Condensing Unit for every air conditioning and refrigeration need.

CURTIS REFRIGERATION
AIR CONDITIONING AND COMMERCIAL

McLaughlin Tells Meat Dealers Importance of Humidity Control

(Concluded from Page 6, Column 5) and increased return from the sale of this 80 pounds and at 20 cents per pound it would result in an additional amount of \$832 in the cash drawer at the end of each year.

SAVINGS IN MODERNIZING

This brings up the point of modernization. We are in an upward moving cycle of business recovery. Our company has modernized many meat merchandising stores where an old fashioned ammonia machine was showing a high operation cost.

In one particular store we replaced a 30-hp. unit of this nature with a 5-hp., a 3-hp. and a 2-hp. unit with a much more favorable control of temperature and humidity.

The kilowatt demand charge alone was reduced approximately \$650 per year besides a greater saving in electric current and shrinkage losses. If you have old fashioned equipment you should think seriously of modernizing your establishment.

HUMIDITY CONTROL

A great deal has been done in the past in the matter of temperature control but it is only recently that we have realized the value of close humidity control.

And what is humidity? The air we breathe and in which we live, like fish in an ocean of water, contains oxygen, nitrogen, carbon dioxide, and a few rare gases. In addition to this it contains some water vapor.

The air can only hold a limited amount of water vapor. Any excess will come out in the form of dew or condensation.

DRYING THE PRODUCT

We can refer back to our rubber band again for an illustration. The greater the thirst for moisture by the air the more will be the pull or stretch between the air on the one hand and the product holding the moisture on the other. The greater the pull or thirst of the air the more moisture will it absorb and the more will it thus dry out the product from which it takes the moisture.

As with the rubber band the greater the stretch the more work is stored up, and the faster will the return be made when released. Thus the lower the humidity the more will the meat products dry out.

MIRROR DEMONSTRATION

Now let us look at this mirror which I hold in my hand. It is approximately room temperature because it has been lying here for some time. When I breathe on it my breath is much warmer than the metal itself and the minute particles of moisture in my breath are deposited in the form of condensation. These are very fine particles of moisture which have become visible when condensed on the surface of this metal mirror.

The air, being thirsty for this moisture, immediately starts to pull it off the mirror. Watch it disappear. It takes a definite time however for this to occur.

Now I will put the mirror under my arm and warm the metal almost to body temperature. See what happens. The metal is now warmer and cannot hold on to the moisture as tenaciously. The air still craves for it with the same craving or pull but the mirror releases it more readily. The result is that it passes into the air much more rapidly.

The point I want to drive home is this. As I change the temperature of this metal surface I can change the speed of moisture transfer from the metal to the air.

In other words, if I design the surface properly and maintain the correct differential of temperature between the metal surface and the air I can control the humidity to any desired degree. Thus a properly designed and balanced cooling unit is essential to high refrigeration efficiency.

Percival to Use Betz Filterpure Units

HAMMOND, Ind.—Filterpure cooling units, manufactured by Betz Corp. here, have been adopted as standard equipment by C. L. Percival Co., Des Moines, in its 1938 line of display cases, reports Lyman B. Betz.

The new Percival line, deliveries on which are just starting, is claimed to reduce dehydration, discoloration, and contamination of meats and other refrigerated food products.

Toledo-McCray Converts Used Floor Cases into Beverage Coolers

TOLEDO — Conversion of used commercial floor cases into bottled beverage coolers has enabled the local branch of McCray Refrigerator Co. to sell quite a few of the old display cases which it had on hand.

This transmutation is accomplished simply by removing the racks and baffles from the ice or coil chamber and substituting a blower coil. The dry-storage refrigeration and display facilities afforded by this arrangement are said to have many advantages over the old wet-storage ice chest.

Maine Fish Co. Installs Fast-Freeze System

PORTLAND, Me.—Installation of a blow-type fast freeze refrigeration and storage system of 1,000,000-pound capacity is being made by Portland Fish Co., which is rebuilding its plant heavily damaged by fire last November.

George L. Radcliffe, president of the firm, reports that the freezing system will be the largest owned by a fish company in Maine. New equipment will enable the concern to store about 250,000 pounds more fish than the old plant held.

The new fast freezing room is being insulated with cork, and blowers will circulate 40,000 cubic feet of air a minute, changing the air once every 1½ minutes. A single fillet of fish may be frozen solid in 20 minutes, and five-inch boxes may be frozen in three hours and 15 minutes, as compared to the 36 to 40 hours needed under old system.

A steel frame wooden building which is being constructed will include office room, a sales room, a filleting room, cooling rooms, and a place for ice storage.

Carrier Issues Manual on Centrifugal Refrigeration

NEWARK—A new semi-technical manual on centrifugal refrigeration has been published by Carrier Corp.

Lavishly illustrated, the 48-page brochure treats of the principle and operation of the Carrier centrifugal machine embodying the use of Carrene refrigerant.

It points out the adaptability of this type of equipment for small and large tonnages, its applications ranging from comfort cooling to industrial process and refrigeration work down to -110° F., including heat balance applications and functioning in combination with existing ammonia equipment.

VIRGINIA SMELTING Company
WEST NORFOLK, VIRGINIA
131 STATE ST. BOSTON 76 MASS. U.S.A.

EXTRA DRY
ESOTOOL
LIQUID SULPHUR DIOXIDE
V-METH-L
VIRGINIA METHYL CHLORIDE

Refrigeration Used to Delay Fish Hatching

WINNIPEG, Manitoba, Canada — Refrigeration is employed to delay by one month the hatching of fish in Manitoba every year. The experiments, conducted at the Dauphin River Fish Hatchery, are likely to be adopted as a permanent policy.

Last fall, 5,000,000 whitefish eggs gathered from spawning grounds were kept in the hatchery all winter. Egg-hatching was retarded one month by a cooling system placed in the tanks. Fish were kept in the

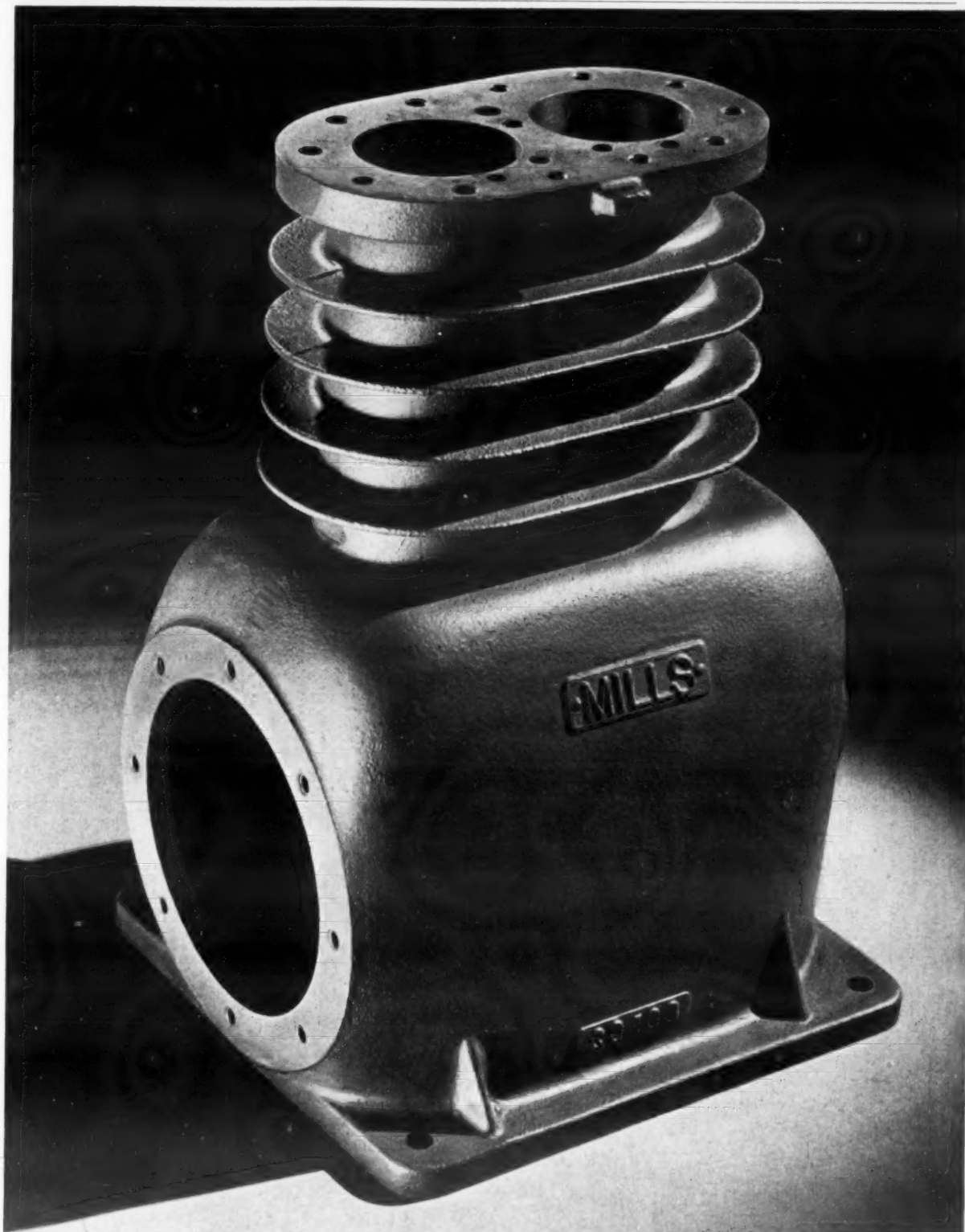
hatchery until they reached fingerling size, instead of being released in lake waters as fish fry soon after hatching—the usual custom.

As a result, the fish were placed in the lake when feeding and weather conditions were at their best, and they were big enough to withstand attacks of their natural enemies. A. G. Cunningham, director of games and fisheries, estimated mortality of whitefish fry placed in lakes in past years to be as high as 97 or 98%.

Railway Union's Cooperative Uses McCray Equipment

JACKSON, Mich.—R. K. Pebble, McCray distributor in this territory, has sold several units of McCray refrigeration equipment to the Cooperative Society of Railway Brothers for use in the society's cooperative food store.

The installation consists of three FC-12 cases, one special two-compartment meat and vegetable cooler, a partition, and two refrigeration machines.



This Is the Cylinder Block

Heavy one-piece casting of close grained iron insures positive alignment of all moving parts, prevents friction, strain, and wear—a sample of the sturdiness of Mills Modernized Refrigeration.

Mills Condensing Units

Mills Novelty Company

4100 Fullerton Avenue, Chicago, Ill.

Anaconda Copper
REFRIGERATION TUBES
They Flare without cracking
THE AMERICAN BRASS CO.
FRENCH SMALL TUBE Branch
General Offices: Waterbury, Conn.



FOREIGN NEWS

Refrigeration Sales 'Get Along' In Yugoslavia—Until Official Discovers Electric Motors

By John Strohm

LJUBLJANA, Yugoslavia — Until some wise governmental official got to tinkering around his Frigidaire electric refrigerator and discovered an electric motor a few months ago, the electric refrigeration industry here was getting along—although not exactly flourishing.

But now refrigerators are no longer importable as "household cabinets" or furniture, but as "electrical equipment." And as such they

are dutiable at a rate of 250 gold dinars per 100 kilograms instead of the furniture levy of 100 gold dinars. (One gold dinar = 25 cents.)

"All of this means we are being forced slowly to liquidate our refrigeration business," declared Manager Joe Justin of Jugotehna, distributor for Frigidaire and biggest refrigeration firm in Yugoslavia.

From 1930-36 Frigidaire did good business, selling 1,000 units in Yugo-

slavia through its three branch stores and dealers. As the only refrigeration firm in the country equipped with a sales and service organization it outsold all other makes combined 10 to 1, declares Mr. Justin.

IMPORT BANS

And, according to Mr. Justin, the market was just beginning to slowly open up when the government slapped the business in the face in 1936. It drew up a "thou shalt not import" list of 39 items "unless thou shalt first secure a permit from the National Bank." Among these items were refrigerating machines, compressors, electric motors, radios and their parts, and automobiles.

These restrictions applied to all countries whose trade balances were unfavorable to Yugoslavia and those with whom she had no trade agreement. They applied to the United States.

Securing this import permit is practically impossible. It all depends, as one importer put it, upon whether or not the "officials of the National Bank are in good humor, have had a good breakfast and a sound sleep." The majority of permits are turned down.

TRADE DEAL

A few are granted on condition the importer export an equal amount of Yugoslavian goods to the States. (Sometimes a greater amount is specified, sometimes it's smaller, and in most cases the exchange rate for the Yugoslav dinar goes up from 10 to 15%.)

Jugotehna had a shipment of compressors and coils ordered when this edict came. So Mr. Justin chased about Yugoslavia looking for someone with goods to ship to America.

Getting the 'Lowdown' on a Little-Known Market

Taking readers of REFRIGERATION NEWS into Yugoslavia, Correspondent John Strohm this week explains the nature and problems of the refrigeration business in the country of mixed nationalities that was created at the close of the World War.

Mr. Strohm, a journalist on a trip around the world who has been reporting refrigeration activities in many principal foreign cities for readers of the NEWS, tells how an altered basis of import duty and the official favor given to German merchandise has injured importers of American refrigeration equipment. But he also relates the courageous and ingenious ways in which the distributors are fighting to overcome such handicaps.

He finally found a sugar beet exporter in Belgrade, and one year after his goods arrived in Hamburg he got his permit from the bank to bring them into the country.

Germany is now taking charge of the market in many lines as a result of these restrictions on U. S. goods. (She is protected by a trade agreement with Yugoslavia.) Last year only 240 American cars were imported as compared to 745 of German make. American automobile dealers are tearing their hair, but even this doesn't secure import permits. Jugotehna has been getting its compressors from Germany during the past year.

AGREEMENT RUMORED

The only hope for American importers is a Yugoslav-American trade agreement. There have been rumors of such a treaty, and a committee has been appointed here to study the matter. However, according to the American consulate authorities, there is also talk that the government plans to broaden her import

restrictions to apply also to those countries now protected by trade agreements.

The market for refrigeration was improving, backed by increased purchasing power, when the government decided that all refrigerators were electrical equipment and issued its knock-out blow against the 39 items. The Minister of Finance estimated last year that the per capita income was 3,000 paper dinars or about \$60, a great increase in the past ten years. Prices are better and the people are getting more for their products.

Jugotehna until recently imported all domestic units as household cabinets, paying a duty of about \$25 per 100 kilograms. This is the duty on metal cabinets, that on wooden cabinets being twice as much. But now, even if he can secure an import permit, Mr. Justin must pay approximately \$62.50 per 100 kilos.

GERMANS GET MARKET

"German refrigerators will sell here for less than the American makes cost us—we cannot compete," he declared. And so Owner I. Knez, who also has the Chevrolet and Buick agencies, has decided to retire gradually from the refrigeration business.

It has been an uphill fight, selling refrigeration in Yugoslavia. People want refrigeration and like it, but they have little money. They like the quality of American products, but often succumb to the cheapness of German equipment, according to Mr. Justin. But even with the restrictions, Jugotehna sold 60 domestic units and 44 commercial jobs in 1936, and up to Aug. 1, 1937, had sold 30 domestic and 44 commercial units.

"We have had to visit a prospect 10 or 12 times, all of which costs money," he said. "Also we have had to give credit of one, two, or even three years."

Sales have been mainly in the cities of Ljubljana, Zagreb, Belgrade, Nish, and Split. Not much electric power is available outside the large cities. The commercial market has been good, especially in hotels, butcher shops, and food stores.

NO AIR CONDITIONING

As yet there is definitely no market for air conditioning, Mr. Justin believes. It's too expensive, people don't know what it is, and the climate is not excessively hot.

Neither does he think household appliances will find a ready sale here for some years. The suggestion that the peasants might need electric washers brought a laugh—they use homemade washboards which don't even have any ridges on them.

There are about 1,200 refrigeration units in the whole of Yugoslavia. (Concluded on Page 9, Column 1)

"Hi, PUDDLE-FACE!"
DON'T LOOK NOW—BUT YOU'RE IN TERRIBLE SHAPE!

"NO WONDER!"
I FELL ASLEEP IN A METAL TRAY AND WOKE UP IN THE SINK!

REFRIGERATOR BUYERS DO LOOK NOW FOR Flexible Rubber Trays

There is no question about it—Inland's consistent national advertising of Flexible Rubber Trays has caused prospective refrigerator buyers to look for them before they buy. So why take chances? Why not assure your prospects of ice cubes instantly right at the refrigerator... one or a dozen... full-sized, cold and dry?



ICE CUBES INSTANTLY—AT THE REFRIGERATOR

dramatic and demonstrable guarantee of ice cubes when and where they are needed... instantly at the refrigerator. Give them the sales-speeding benefit of Flexible Rubber Trays. Insist that the refrigerator you sell comes factory-equipped with Flexible Rubber Trays.

INLAND MANUFACTURING DIVISION
General Motors Corporation
Dayton, Ohio

PREST-O-LITE TORCHES

Ready for instant use



ANY Prest-O-Lite Torch provides a high-temperature flame instantly. No pumping or preheating is necessary. You merely open the valve and light the gas, and the torch is ready for any soldering, heating or light brazing operation.

Ask your jobber to demonstrate these modern Prest-O-Lite Torches.

THE LINDE AIR PRODUCTS CO.
Unit of Union Carbide and Carbon Corporation
New York and Principal Cities
In Canada:
Dominion Oxygen Co., Limited, Toronto



DOMESTIC and COMMERCIAL CABINETS "Built by Midwest"

Midwest offers the most complete line of high grade Refrigerator Cabinets in the United States - - - models from 4 to 66 cu. ft. capacity - - - quality built - - - reasonably priced. Orders shipped the same day received on stock models. (Factory located on main line of Santa Fe and Burlington.) Write or wire for prices and discounts.



4, 5, 6, 8 Cu. Ft.



11, 13, 16½ Cu. Ft.

Commercial models furnished with porcelain, Dulux or stainless steel exterior—porcelain or Dulux interior—full-length meat doors, or glass doors—all models furnished with or without coils (2-door models with ice cube evaporators).



22, 25, 27, 44, 66 Cu. Ft.

MIDWEST STAMPING & ENAMELING COMPANY
GALESBURG, ILLINOIS

Low Incomes Restrict Yugoslav Market

(Concluded from Page 8, Column 5)
a thousand of them being Frigidaires. Almost all of the other makes are represented, but only by "small dealers who do not give service or have sales organizations," Mr. Justin reported.

He was bitter about "the robbers in Beograd," his name for the government.

"Yugoslavia is an artificial country which cannot exist for long," he declared. "One million Slovenians are dissatisfied. Four million Croats are bitter against the government. Macedonia, Bosnia, and Montenegro want a change. It's all because these different peoples were incorporated in an artificial state under a rule by the Serbs, a minority."

He predicted a change in the near future. The "change" desired by the dissatisfied factions is a federation with each state managing its own finances, and possessing certain sovereign powers.

"There must be a change or the entire country will collapse!"

LOW INCOMES

Of the 13,000,000 inhabitants, the majority are of the peasant class engaged in agriculture, forestry, and stock, poultry and fruit raising. A day laborer gets only \$12 or \$14 a month, and he may have from five to 10 children—there is hardly room in his budget for an electric refrigerator.

Exports to the United States totaled \$4,864,250 in 1936 and consisted mainly of raw copper, hops, dried beet pulp, opium, hides and skins, sour cherries, pyrethrum, sage leaves and other botanical products, tanning extracts, glue, bone meal fertilizers, cheese, cement, and chrome material.

Imports in 1936 from the States amounted to \$5,910,045 and were made up mainly of raw cotton, automobiles, trucks, automotive parts and accessories, industrial, agricultural and miscellaneous machinery and apparatus, lubricants, crude copper, paraffin, tallow, leather, rice, chemicals, motion picture films, office machines, iron waste, and sheet iron.

OUTLOOK BAD

The present outlook for American refrigerator exporters is bad. Yugoslavia has a poor buying public, more governmental restrictions than rules in rule book, and there is no sign of a let-up.

Yet, he is not licked. While slowly liquidating Yugoslavia's biggest refrigeration firm—fast liquidation would mean excessive loss from \$60,000 worth of spare parts—he intends to seek every loophole for getting machines at a price low enough to resell at a profit. He may try importing the reciprocating type and installing the motor here, having done this before. And he has "other ideas."

"But it's a tough fight," he concluded.

Dr. Plank Inspects American Refrigeration Activities in New York, Detroit, & Chicago

Representatives of the refrigeration industry in New York City, Detroit, and Chicago have been hosts to Dr. Rudolph Plank, director of the Kältetechnisches Institut, Technische Hochschule, Karlsruhe, Germany, during his current tour of American refrigeration centers.

Arriving in New York City Aug. 19 on the S. S. Bremen, Dr. Plank and his companion, Dr. Ing. Linge, were guests at a luncheon at the Engineer's Club, given by members of the New York American Society of Refrigerating Engineers council and other refrigeration leaders.

Attending the luncheon were Crosby Field, H. C. Guild, Prof. Carl F. Kayan of Columbia university, A. A. Berestneff, Siegfried Rupprecht, George A. Horne, Gardner Poole, C. H. Roe, C. R. Barnicoat of New Zealand, Prof. B. E. Proctor of M.I.T., and David L. Fiske, national secretary of A.S.R.E.

On his arrival in Detroit, Aug. 26, Dr. Plank was guest at a luncheon given by members of the local chapter of A.S.R.E. in the Wardell hotel.

Present at the luncheon were W. G. von Meyer, vice president of Copeland Refrigeration Corp.; D. D. Wile, chief engineer of the refrigeration and air-conditioning department of Detroit Lubricator Co. and vice chairman of the Detroit A.S.R.E. chapter; Victor Smith, Sunbeam Electric & Mfg. Co.; F. M. Cockrell, publisher of the NEWS and chairman of the Detroit A.S.R.E. chapter; George F. Taubeneck, editor of the NEWS; K. M. Newcum, refrigeration service editor, and F. O. Jordan, air-conditioning editor.

Before the luncheon, Dr. Plank visited the plant of Universal Cooler Corp. in company with Tom Pendergast, manager of the company's commercial refrigeration department. Later in the afternoon, he toured Detroit Lubricator's factory as a guest of Mr. Wile, and the Copeland plant as a guest of Mr. von Meyer.

Dr. Linge, who had stopped off in Niagara Falls, rejoined Dr. Plank in Detroit on Aug. 27, and the two men visited the Detroit plant of the Kelvinator division of Nash-Kelvinator Corp. in company with Mr. Tullus and Dr. L. A. Philipp of Kelvinator's research department.

That afternoon, Dr. Plank visited the Norge division, Borg-Warner Corp., and on the morning of Aug. 28 was shown through the Borden ice cream plant by Mr. Karl, Borden engineer.

Dr. Plank and Dr. Linge then left for Chicago, where on Aug. 30 they were honored at a luncheon in the Union League club. Present at the luncheon, which was given by officers and directors of the Chicago section of the A.S.R.E., were Deane E. Perham, B. E. Seamon, T. C. McKee, Oscar A. Anderson, S. C. Bloom, C. W. Gilmore, J. F. Nickerson, Emerson A. Brandt, George G. Distler, Paul I. Aldrich, Eugene F.

McPike, Paul Willer Peterson, and C. C. Elmes.

In the afternoon the two men were guests of Mr. Elmes, of the research division of the Association of American Railways.

They inspected the Central Cold Storage Co.'s plant Tuesday morning, Aug. 31, their guide being Mr. Gilmore, supervising chief engineer.

Mr. Anderson, assistant chief engineer of Armour & Co., conducted the visitors through the packing company's new beef house Tuesday afternoon.

The following two days Dr. Plank and Dr. Linge spent in Milwaukee, returning to Chicago Friday morning for a visit to the municipal ice plant under the guidance of Mr. Brandt, technical secretary of the National Association of Ice Industries.

From Chicago Dr. Plank and his associate planned to go to Dayton, Cleveland, Mansfield, Pittsburgh, and eventually to Cambridge, Mass., where on Sept. 16 Dr. Plank will address the Food Technology Conference.

Dr. Plank's present tour of inspection is his third visit to the United States, his two previous trips being in 1927 and in 1931.

One of the best-informed refrigeration engineers in the world, Dr. Plank attended the university in Kiev, Russia, in which town he was born in 1886, and then studied four years for his doctorate at the Technical University in Dresden, Ger-

many, his thesis being on the theory of the absorption machine.

Later he became assistant to Prof. Lorenz at the Technical University of Danzig, after which he spent several years with the Borsig company at its main factory in Berlin.

When only 27 years old, Dr. Plank returned to the Danzig school as a full professor, and did his first experimental work on frozen foods and initiated researches on refrigerating machinery.

For the past few years Dr. Plank

has been engaged chiefly with the executive functions of the Karlsruhe institute, and has been less directly active in technical work.

His first book on refrigeration was published more than 25 years ago, and since that time he has had published more than 100 articles and books, most of them being written before 1926, when the institute was organized. Last year Dr. Plank published a detailed history of refrigeration and several articles on the properties of ethane.

Don't Close the Door to EXTRA PROFITS

★ Don't forget to check the door gaskets when you service a refrigerator—particularly if it is five years or more old. The efficiency of thousands of refrigerators is threatened, today, because of time-worn gaskets. If you are on the lookout for extra profits, now is the time to capitalize on this new and ever-growing replacement business.

No costly equipment or material stocks are required. The simplified Miller line of 20 gasket types enables you to service 80% of all refrigerators ever made. Order them according to your needs. Complete warehouse stock insures immediate delivery.

As the first step towards getting your share of this profitable business, send for illustrated price list. If your local jobber cannot supply you, write direct.

THE MILLER RUBBER COMPANY, INC.
Akron, Ohio



Buyers OK THE BONDERIZED FINISH

In the past few years millions of refrigerator buyers have approved Bonderizing as the most effective finishing precaution for the prevention of rust.

During these years, buyers have learned to depend upon Bonderizing for greater finish stability. As a base for the enamel it holds the finish, prevents chipping or peeling and maintains original fine appearance, so desirable on kitchen equipment. It prevents the spread of rust around accidental scratches.

The value of Bonderizing is well known to prospective buyers. It is a sales feature that should be mentioned in every demonstration.

PARKER RUST-PROOF COMPANY
2197 E. Milwaukee Avenue, Detroit, Michigan

Send for this book. It includes data and charts showing what a salesman should know about Bonderizing.

PARKER

Processes CONQUER RUST
BONDERIZING • PARKERIZING

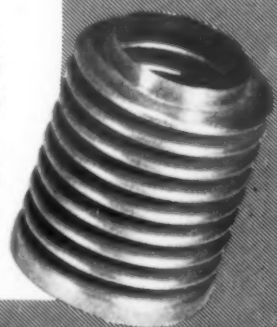
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Why do manufacturers place complete confidence in Bridgeport Bellows?

They have learned that Bridgeport's exacting analysis and control of the alloys from the induction furnace to the finished seamless bellows... plus a system of rigid inspection of every bellows... guarantees close adherence to their requirements as to dimensional limits and physical characteristics.

They have learned that Bridgeport's policy to give individual attention to their particular requirements insures outstanding bellows performance in their products.

Bridgeport is prepared to cooperate in the same manner with you. Write for Bulletin R today. Bridgeport Thermostat Co., Inc., Bridgeport, Conn.



BRIDGEPORT Knows BELLOWS

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Trade Mark registered U. S. Patent Office.
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Electric Refrigeration News

Published Every Wednesday by
BUSINESS NEWS PUBLISHING CO.
5229 Cass Ave., Detroit, Mich.
Telephone Columbia 4242.
Cable Address: Cockrell-Detroit

Subscription Rates
U. S. and Possessions, Canada, and all
countries in the Pan-American Postal
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All other foreign countries: \$6.00 per year.
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VOL. 22, No. 2, SERIAL NO. 442

SEPTEMBER 8, 1937

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Definition of A Jobber

JOBBERS are, by nature, opportunists. Generally speaking, they have the most flexible and versatile operation in the entire distribution system, from factory to consumer. They supply what is wanted when it is wanted, and find it relatively easy to switch from one line of products to another when such course of action seems advisable.

No such flexible course can either the manufacturer or dealer pursue. The manufacturer must make up his mind that a certain product is "right," and that it will sell. He then must make a large investment in designs, patents, tools, dies, materials, advertising, and selling. If the product is not readily accepted by the trade or the public, or if competition offers something a little better—or something equally good at a lower price—the manufacturer is out of luck for the season.

Dealer 'Stuck' with His Location and Customers

Likewise, the dealer must gamble on his location and his list of prospects and old customers. If his location fails to draw floor traffic, he is stuck with his lease. If his neighborhood has a bad season financially (as in the case of poor crops in a farming community, or an industrial spot during a prolonged strike) the dealer shares the ill fortune of his neighbors.

The jobber, however, can assume his burden of the distribution of a new product when the time is ripe, and drop it to switch to another whenever the going gets tough. If his field gets too good, he must expect a flock of competitors. If it gets too big, he must expect large users or large retailers to attempt to purchase direct from the factory, rather than through him.

In either case, he generally can find some new line to offset losses of business in his old line. Those

who have observed the activities of jobbers—and heard them talk shop—over a considerable period of time, might be led to believe that the jobber is inevitably fighting a losing battle. Perhaps he is, but the smart ones seem to get rich in the process.

More Jobbers Getting Into Refrigeration Parts Business

Thus it is that one of the chief concerns of the refrigeration parts jobbing business today is the rising influx of new jobbers into the business. The business has begun to get good. More and more jobbers want to get into it. Manufacturers, noting with some chagrin that their sales are tapering off along with the annual seasonal decline, are frequently inclined to listen to the pleas of new jobbers for franchises. By stocking up new appointees they can maintain their sales somewhere near the peak.

Having found this sort of thing temporarily profitable, enthusiastic field men are likely to continue appointing jobbers until they get down into smaller and smaller towns, and begin to appoint firms which are not jobbers at all, but dealers.

If Business is Spread Too Thin, Jobbers May Turn Elsewhere

Eventually, these wholesale appointments of wholesalers will break down the entire jobbing system. The jobbers, facing more and more competition in smaller and smaller territories, will soon find the refrigeration and air-conditioning parts business unprofitable. With their well-known flexibility, they will in all probability turn to something else.

Thus it is to the interest of the manufacturer of parts and supplies to protect the legitimate jobber by not appointing any more outlets than are needed to serve each territory properly and profitably.

Observing with some alarm the growing tendency to grant jobbing franchises to concerns which are primarily retail establishments, President R. H. Spangler of the National Refrigeration Supply Jobbers' Association recently wrote directors of the association, asking them for definitions of a jobber.

Kerotest Submits Definition Of Refrigeration Parts Jobber

The following definitions, submitted by J. S. Forbes of Kerotest Mfg. Co., may be considered typical:

A refrigeration parts and supplies jobber is a business establishment which:

- (1) Maintains and warehouses a stock adequate to supply the requirements of its trade, on its own account and assuming its own financial responsibility.
- (2) Has the proper facilities for the conduct of this business, including store, warehouse, sales organization, delivery system, accounting system, etc.
- (3) Distributes wholesale at least four important mechanical refrigeration commodities (such as copper tubing, valves and fittings, belts, controls, expansion valves, refrigerants, refrigeration oils, condensers, evaporators or evaporator coils, dryers and filters, refrigeration service tools, gaskets) for the installation or service of low-pressure mechanical refrigeration using sulphur

dioxide, methyl chloride, Freon, iso-butane, etc., but not necessarily including the ammonia type of machine.

(4) Distributes to the wholesale trade only a catalog, which either may be individual, or an aggregation of manufacturers' catalogs.

(5) Is not directly or indirectly engaged in the retail sale, installation or service of mechanical refrigeration and does not compete with dealers, distributors, independent service men, or any of the resale trade factors to which the jobber is expected to sell his stock in trade.

(6) Follows fair trade practices and maintains sales prices on a profitable plane.

Refrigeration Business Has Been Kept on a High Plane

In connection with the above "definition" of a refrigeration parts jobber, it should be remembered that the business of selling refrigeration equipment to the American public has been kept on a comparatively high plane. Except for isolated times and instances, refrigeration merchandising has not descended to "racket" levels.

Moreover, every indication points toward the fact that refrigeration merchandisers are striving to make the business still cleaner. The present tendencies are all toward guaranteed territories, resale price maintenance, and fair trade practices. Hence the younger jobbing business should not set up a cross current if it doesn't want to muddy the waters.

Just as too many dealers have started price-cutting wars in many cities, so will too many jobbers disrupt, disorganize, and dismay that end of the business—one which has proved itself to be of inestimable service to the industry during the last few years.

Large Manufacturers Now Recognizing Parts Jobbers

After considerable hesitancy, the large manufacturers of refrigeration equipment are now showing a disposition to "recognize" the refrigeration supply jobbers (note announcement in this issue regarding Servel's new policy of selling parts to jobbers). Kelvinator adopted a jobber policy fairly recently. Others are known to be seriously considering the proposition.

Their general acceptance of the jobber as a necessary and a constructive factor in the industry will be a big thing for the jobbing business; and the smart operator will serve his own interest by keeping his house in order and by using all his influence to promote business practices in the jobbing field which will command the respect of the large manufacturers as well as the confidence of his customers.

LETTERS

Specifications Books Give Data on All Old Models

National Store Fixture Co.
1547 Blake St.
Denver, Colo.

Aug. 21, 1937

Editor:

We would appreciate it very much if you will be kind enough to advise us or refer us to some organization or service bureau who gets out a bulletin mainly on refrigeration compressors of various makes on which

they give the age, form serial numbers of the compressors, also the dealer's value.

This information is necessary and valuable to our sales department in being able to arrive at a value on second hand compressors for trade-in purposes. The book or information that we are interested in getting is something on the order of the Blue Book which is furnished to automobile dealers. Anything you can give us on this will be greatly appreciated.
HERMAN GOALSTONE

Answer: In 1936 we issued a 512-page book entitled "Refrigeration & Air Conditioning Specifications—All Models—All Makes—All Years—Household and Commercial Types," which sells for \$3 per copy.

This is the first and only book of its kind ever issued and will give you most of the desired information. For most makes and models the original retail price is given, also the compressor model number, size and speed of motor, belt size, kind of refrigerant and amount of charge, also the oil charge. Information regarding cabinets includes the cubic-foot capacity, exterior finish, exterior and interior dimensions and shelf area. The data also includes information regarding the bore and stroke of the compressor, type of seal, control, etc.

This book was designed primarily to provide the information needed by service men but it is also valuable to dealers in determining trade-in values. Please note, however, that the book does not give trade-in prices.

There has been some demand for a book of recommended trade-in prices for refrigerators on the order of the "Blue Book" which is used by automobile dealers. This proposition has been given careful consideration by the publishers of the News, also by the manufacturing executives represented in National Electrical Manufacturers Association (Nema), but it has been generally agreed that such a service is not practical at the present time.

The present plan is to revise the data in the Specifications Book within the next few months and offer a 1938 edition, probably in the form of small booklets (similar in size to the new series of Master Service Manuals) which may be sold at \$1 per copy.

In compiling the 1936 Specifications Book our aim was to make it as complete as possible. The result was a very bulky book and one which was very expensive to produce. When the book is revised and split up into smaller units we can furnish that part of the information which is desired by most dealers and service men in a convenient form and at a popular price.

The Refrigeration Division of National Electrical Manufacturers Association, whose membership includes the leading companies making household and commercial equipment, has given its endorsement to the plan for revising the Specifications Book and will cooperate with Business News Pub. Co. in compiling the data.

How Do You Vote On the Patent Digests?

Koch Butchers' Supply Co.
600 E. 14th Ave.
North Kansas City, Mo.

Editor:

We certainly miss the list of refrigeration patents in your paper. We found it very useful.

The abstracts of patents which you formerly published were even better.

We hope that you will reinstate this feature. It interests us far more than the news that W. H. Bantz air conditioned the Woolworth Building in Salt Lake City.
RAYMOND STARR,
Vice President.

Union Steel Products Co.
Albion, Mich.

Editor:

We too missed the digested reports of patents that used to appear in AIR CONDITIONING AND REFRIGERATION NEWS and are writing in response to the suggestion that you made in your letters column of the Aug. 25 issue.

While we are subscribers to a regular patent service, we very often find information regarding patents that are interesting to us in the columns of AIR CONDITIONING AND REFRIGERATION NEWS.

LEONARD BUTTERS,
Sales Department.

Kerotest Mfg. Co.
Pittsburgh, Pa.

Editor:

In your letters column in the Aug. 25 issue, in reply to a letter received from J. N. Roth, engineer of Gibson Electric Refrigerator Corp., you stated that you would like very much to get the reactions of other readers on the question of whether or not patents constitute interesting and vital information.

Please note that I have been a reader of the News for the past seven years, and believe the Patents column is very important to our company to keep informed of new inventions. Previous to a year ago, you in-

cluded a description of the patent, but even with the description eliminated it is still helpful, since the necessary information may be obtained by reference to the illustration and patent number.

H. H. LAMAR

S. A. Limpert
121 S. Clinton Ave.
Bay Shore, N. Y.

Editor:

We most heartily agree with the Gibson Refrigerator Corp. in regard to the omission of patent information in REFRIGERATION NEWS.

We have been one of the early subscribers to the News and have come to rely upon the weekly patent page contained therein. For this reason we hope to see this information included, particularly since it has always been considered by us as part and parcel of your paper. We would be most disappointed to see this feature discontinued.

A. S. LIMPFT

Bohn Refrigerator Co.
131 N. Haven St.
Baltimore, Md.

Editor:

We note that your magazine has for some time omitted listing the patents, which are of interest to those in the refrigeration industry.

This was always an interesting item to us as we get no other publication which would list these.

We would appreciate your telling us where we can get this information. There may be a good reason for your leaving this out.

M. M. MILLER,
Works Manager.

Editor's Note: In the Letters Column in the Aug. 25 issue it was explained that after having published patent information in REFRIGERATION NEWS for 10 years, the editors had begun to wonder if enough readers were interested in patent digests to justify the amount of space they took in the paper, and thus had left them out for several weeks to see what reaction would be forthcoming from the readers.

The above letters indicate that the patent digests had some faithful followers, but we'd like to get some more opinions before making the decision as to whether or not publication of such information should be continued in the News. How do you feel about it?

Bringing Market Data Up to Date

Sunbeam Electric Mfg. Co.
Evansville, Indiana, U.S.A.
Aug. 24, 1937.

Sirs:

We are planning to make a statistical survey on sales and should appreciate your sending us a copy of your REFRIGERATION DIRECTORY AND MARKET DATA BOOK for 1936.

The information we desire is statistics on sales by states and also by years as near to date as this information is available.

E. C. ENGELBRECHT,
Sales Department.

Answer: No edition of the REFRIGERATION DIRECTORY AND MARKET DATA BOOK was published in 1936.

However, we are planning, in the near future, to reprint in the form of a leaflet some of the figures showing sales by states, etc. for the period not covered by the 1935 MARKET DATA BOOK.

'Air Conditioning Surveys' Gives Installation Figures

Harrison Radiator Division
General Motors Corp.
Lockport, N. Y.

Sept. 2, 1937.

Sirs:

We are accumulating data on air-conditioning and cooling installations for the year of 1936 and the first half of 1937.

Considerable information has been obtained from the AIR CONDITIONING AND REFRIGERATION NEWS, but we thought possibly you had a recap or table of complete systems installed for last year, as well as the first half of this year, giving us the manufacturer, tons, and horsepower.

As you know, we manufacture several types of heat transfer materials and what we are really trying to do is establish the amount of heat transfer material used in such installations during the period specified.

C. P. HART,
Sales Manager.

Answer: We have published an 84-page booklet entitled "Air Conditioning Surveys" in which is reprinted all data on air-conditioning installations in the principal cities which appeared in the News over a period of several months. We believe this will give you the desired information.

We are continuing to collect additional installation data which will be published in the News from time to time. Two special surveys in Baltimore and Chicago have recently been made by members of our staff, but this data has not yet been digested and arranged for publication.

Straight Shooting Frigidaire Dealer



If Frigidaire Dealer Frank G. Carroll of Brecksville, Ohio, is as good at knocking off sales as he is at knocking down clay pigeons with a shotgun his business must be flourishing. Mr. Carroll recently won the major American trapshooting event, the Grand American Handicap.

Ohio Frigidaire Dealer Shoots Way to National Trapshooting Trophy

DAYTON—It took 100 shattered clay pigeons for Frank G. Carroll, Frigidaire dealer at Brecksville, Ohio, to annex the largest crown of the trapshooting world—the Grand American handicap—at Vandalia, Ohio. A veteran of the field but a novice before the traps, Carroll had never before competed in any championship shooting tournament.

The champion outdistanced a brilliant field of approximately 1,000 of the nation's best marksmen, including 10 former champs. He shot from the 19 yard line. This is the third time in the history of the handicap event that a perfect score was necessary to win it.

Carroll is a powerfully built man, standing six feet, four inches, and weighing 215 pounds. He displayed nerves of steel during his last twenty-five targets, for if there ever was "pressure" in shooting, it hovered over him as he shot out the last of his string.

Having run off his first perfect 75, the news spread around the ground, and as he finished his next 10, hundreds of spectators flocked to the spot where he finished up. As the ninetieth target fell before his gun, the crowd cheered and again at the ninety-fifth voiced approval of his gameness, which gradually grew to roar as he dropped his last bird for the perfect score.

The win means a cash prize for Carroll, several fine trophies and a year's possession of the title which is worth no small amount to the holder in prestige and advertising offers.

R. V. Polen, assistant works manager of Frigidaire, was another winner in the shoot when he captured the Class "C" championship, a preliminary to the Grand American handicap shoot. Mrs. Polen, also entered in the events, placed fourth among the women shooters.

Taft Co. Names 8 New Dayton Dealers

SALT LAKE CITY—The L. C. Taft Co., intermountain distributor of Dayton electric refrigerators manufactured by the Dayton Refrigerator Corp., Buffalo, has appointed eight dealers to handle the line. They are:

Bowers Home Appliance Co.; Christiansen Furniture Co.; Quality Appliance Co.; Wolters Electric Co.; Granite Furniture Co., Sugarhouse; Christiansen Furniture Co., Richfield, Utah; Christiansen Furniture Co., Salina, Utah; and Christiansen Furniture Co., Ephraim, Utah.

2,000 Visit Westinghouse Demonstration Home in Pittsburgh

PITTSBURGH—More than 2,000 visitors inspected the "Home-That-Grows" new four-room residence exemplifying low cost housing by use of modern construction materials, completely equipped with electrical facilities furnished by Westinghouse Electric & Mfg. Co., when it was opened near here recently.

Called the "home-that-grows" because it was designed with a flat roof so that the owner can add a second story, or build additional sections in the rear, the house is constructed of white painted brick. It is insulated to prevent heat loss or summer heat infiltration.

The home contains a Westinghouse planned kitchen and laundry. Kitchen equipment which includes electric range, refrigerator, dishwasher, fan, smaller appliances, and work shelves, is arranged to eliminate unnecessary steps. Work table surface is finished in light blue micarta, a shatter-proof molded material claimed to resist moisture, acids, alkalis, and oils, which was developed by Westinghouse engineers.

The laundry, also fully equipped with electrical appliances, is arranged to give the housewife a production line working surface for the cloths to follow.

Glass brick forms the circular walls of the dinette located in a circular bay at one end of the 20 by 11 ft. 6-inches living room. Indirect lighting in the bedroom and connecting wardrobe, and cream enamel tile bathroom walls, are other features.

Nofuze load center is installed in the laundry. This eliminates the need of replacing fuses when a short circuit or overload occurs in the electrical wiring of the home. The nofuze load center includes small circuit breakers which automatically trip open under conditions which cause a fuse to "blow."

The house was designed by Vincent Schoeneman, architect, and built by Albert Fritsch. Building materials were supplied by the McCrady-Rogers Co., the furnishings by Joseph Horne Co., and the electrical equipment by Westinghouse.

Serval Rolls Up Profits of \$4,451,375 for 9 Months

EVANSVILLE, Ind.—Net profits amounting to \$4,451,375 were reported by Serval, Inc., for the nine-month period ending July 31. For a similar period in 1936, the company showed net profit of \$3,792,511.

Profits amounted to \$2.48 a common share of 1937, compared with \$2.10 a share during the same period of 1936.

Minneapolis Distributor Predicts Excellent Fall Business in Wheatlands

MINNEAPOLIS—With farmers in the northwest harvesting their largest grain crops in many years, Harold L. Schaefer, president of Harold L. Schaefer, Inc., Leonard distributor here, predicts that electric refrigeration business will suffer no let-down here during the fall.

"People have been buying electric refrigerators and other appliances at a markedly faster pace this summer," states Mr. Schaefer. "With bumper grain crops, this buying demand should continue through the next three months, and we are planning on a big fall business in Leonard refrigerators."

With 12 wholesalers in the field, the Schaefer organization has established 56 new Leonard dealers this year in the Twin Cities and throughout Minnesota and western Wisconsin.

Officials of the corporation, in addition to Mr. Schaefer, are: Robert B. Norris, vice president in charge of production; G. E. Barnes, vice president in charge of sales, and E. W. Hanson, secretary and treasurer.

Feller & Kerckhove Open New South Bend Branch

SOUTH BEND, Ind.—F. L. Feller and Heinie Kerckhove, former owners of the F. L. Feller Radio Shop, have moved to a downtown location at 313 Lincolnway West, where their establishment is known as the Better Appliance Store.

... WITH BEER SALES TEMPRITE

Sells more beer

The prosperous tavern keeper—the one who is getting real volume and profit from beer sales—is the very best prospect for Temprite equipment.

Temprite, by serving beer perfectly cooled—with the correct collar—and NO WASTE DOWN THE DRAIN, sells more beer, makes the owner more prosperous.

You can readily prove it to the prospect with the Temprite Portable Demonstrator.

Write for Bulletin B-1.



TEMPRITE PRODUCTS CORPORATION
1349 East Milwaukee Avenue • Detroit, Mich.
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES



THE BACKGROUND of the TRIED and PROVEN INSULATION—

● In years of experience—in the extent of its resources—in its highly specialized research, engineering and manufacturing talent—and in its continuous progress in the development and use of glass products, the Owens-Illinois Glass Company occupies an enviable position. With its many laboratories devoted to scientific, technical and engineering research and experimentation, its twenty-five factories strategically located to speed up deliveries and its thirty-two branch sales offices located in principal cities, this company is abundantly equipped

to create, perfect and manufacture glass products and to serve intimately the users of these products.

With such an impressive background, Fiberglas Insulation, the newest Owens-Illinois development, quite naturally met with enthusiastic response on the part of the refrigerator industry. Because it combines in one material all the advantages of other insulations, Fiberglas abundantly fulfills every insulation requirement. Just check these major advantages of Fiberglas and see for yourself if there is one thing lacking:

1. High Insulating Value.
2. Extremely Low Moisture Absorption.
3. Freedom from Rotting.
4. Rodent, Vermin- and Termite-Proof.
5. Freedom from Odors.
6. Non-absorption of Odors.
7. Fungus- and Bacteria-Proof.
8. Light Weight.
9. Non-inflammability.

10. Permanence.
11. Resistance to Acid.
12. Sound Absorption.
13. Resiliency and Flexibility.
14. Availability in Different Fiber Diameters and Lengths.
15. Availability in Different Densities.
16. Adaptability to Combination with Other Materials.

For detailed information about the use of Fiberglas Insulation in refrigerators and coolers, write Industrial and Structural Products Division, Owens-Illinois Glass Company, Toledo, Ohio.

The Owens-Illinois Glass Company also manufactures Insulux Glass Block and Dust-Stop Replacement Type Air Filters in addition to Fiberglas Insulation for all types of industrial use.

The Distributor Who Sells the

Copeland REFRIGERATION LINE

IS BUILDING GOOD-WILL FOR YEARS TO COME!

It is just good business foresight to sell your customers a quality-built Copeland product. Whether you sell a Copeland Household Refrigerator, Commercial Refrigeration, Washer or Ironer, you are wisely building up a backlog of long-time customer satisfaction that will pay you dividends in continued patronage for many years.

Write for Sales Plan
COPELAND REFRIGERATION CORPORATION
Holden Ave. at Lincoln — Detroit

OWENS-ILLINOIS

Fiberglas

THE MODERN INSULATION

Chicago Carrier Outlet Leases New Quarters

CHICAGO — Air Comfort Corp., Carrier air-conditioning distributor in this territory, has taken a five-year lease on the building at 1307 S. Michigan Ave., for use as a general office, showroom, and shop. The new quarters will give approximately twice the floor space of the company's present location says H. E. Wheeler, president.

Cooling Boosts Hot Food Sales In Fort Worth Cafe

FORT WORTH, Tex.—With air conditioning installed in the Hotel Texas here this summer, sales of hot dishes in the Den, popular lunch room, have markedly increased, the management reports.

Hot sandwiches head the sandwich list. Menus often feature only the hot luncheon suggestions, dishes which ordinarily would have scant appeal to jaded hot-weather appetites.

GO TO Gilmer for

V-BELTS THAT FIT

◆ Gilmer V-Belts are "tailor-made in the grooves," on the world's largest assortment of V-moulds.

◆ Made for more models in more sizes for more makes.

◆ Easier to find the belt that fits the job.

◆ Your Gilmer jobber carries complete stocks—always ships promptly—gives you better service so you can serve customers quickly.

◆ Why bungle? Why run risks? Time is money—and Gilmer has the belt!

FREE 120-page catalog **FREE**

L. H. GILMER CO.
Tacony, Philadelphia

The Oldest Firm of Rubber Fabric Belt Specialists

Air-Conditioning Equipment Sales Total \$5,800,617 for July, 1937

Item	Value of Orders Booked		
	July 1937	July 1936	Total, 7 Mos. Jan.-July 1937
Total	\$5,800,617	\$4,377,259	\$44,661,263
Air Conditioning Group—Total	2,992,852	1,932,270	25,807,224
Unit Systems—			
Self-contained (shipped substantially complete)...	435,691	376,874	5,147,416
Not self-contained (shipped in sections), including refrigerating or cooling medium.....	1,217,633	707,300	6,936,801
Central-station Systems, excluding installation if installed—			
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	781,112	446,200	8,645,583
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning)*	23,590	55,040	603,801
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available.....	301,481	146,055	2,503,888
Air washers, including pumps and motors and control where furnished.....	66,537	68,002	670,492
Air filters (not including sales of filters used with machinery other than fans).....	37,185	15,501	243,067
Humidifiers.....	69,623	117,298	1,056,176
Fan Group—Total	\$1,988,944	\$1,681,253	\$12,767,713
Fans, including bearings, pulleys or couplings (if furnished)—			
For public and semi-public buildings.....	138,423	140,995	1,300,378
For general industrial uses.....	563,831	419,575	3,762,895
For mechanical draft.....	248,349	150,951	2,085,947
For jobbers stocks and unknown uses.....	163,359	105,005	1,118,137
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors).....	196,997	164,635	1,092,756
Propeller fans, direct connected and belted (for ventilation only).....	579,255	605,280	2,616,772
Driving mechanism for general fan use (not reported above)—			
Electric motors and controllers (manufactured or jobbed).....	90,032	85,248	687,450
Steam engines (manufactured or jobbed).....	8,698	9,564	103,378
Steam turbines (manufactured or jobbed).....			
Unit Heater Group—Total	\$ 818,821	\$ 763,736	\$ 6,086,326
Industrial Type Unit Heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans.....	134,235	172,516	932,391
Equipped with propeller-type fans.....	242,690	308,854	2,287,812
School Room Type Unit Heaters, including heating element and motors and control where furnished	212,752	123,926	897,083
Indirect Heating Surface (not including unit heater surface)—			
Steel pipe coil type (manufactured or jobbed)....	626	2,896	22,106
Cast iron type (manufactured or jobbed).....	12,332	13,892	79,596
Copper or aluminum type (manufactured or jobbed).....	216,186	141,652	1,867,338

*Includes incidental equipment, such as temperature, motor, humidity, and electrical controls, dampers, outlets, etc., as are sold with each.

Spokane Airtemp Dealer Moves Showroom

SPOKANE—The Crowder Heating & Insulating Co., Chrysler Airtemp dealer here, has moved to new and large quarters at S169 Post St. W. A. Crowder, for many years associated with the James Smyth Plumbing & Heating Co. of Spokane, established his own company here last spring.

New Hutchinson, Kan. Office Bldg. Air Conditioned

HUTCHINSON, Kan. — M. M. Stevens Co. installed Carrier air conditioning in the new seven-story Wolcott building which was formally opened here Aug. 20. All of the 66 suites in the building are furnished with year-around air conditioning.

Detroit's FINEST LOCATION

If "convenience" is important to you then by all means select Hotel Tuller—right in the heart of downtown Detroit—close to stores, theatres, office buildings, and all transportation. Excellent food served at low prices in the Tuller Coffee Shop and Cafeteria... Detroit's friendliest hotel.

800 ROOMS WITH BATH FROM \$2 SINGLE

Harry F. O'Brien, Manager

HOTEL TULLER

ONE OF THE **PICK** HOTELS

CHICAGO, ILL. GREAT NORTHERN
DETROIT, MICHIGAN. TULLER
DAYTON, OHIO. MIAMI
COLUMBUS, OHIO. CHITTENDEN
COLUMBUS, OHIO. FORT HAYES
TOLEDO, OHIO. FORT MEIGS
CINCINNATI, OHIO. FOUNTAIN SQUARE
CANTON, OHIO. BELDEN
ST. LOUIS, MO. MARK TWAIN
INDIANAPOLIS, INDIANA. ANTLEERS
SOUTH BEND, INDIANA. OLIVER
ANDERSON, INDIANA. ANDERSON
TERRE HAUTE, INDIANA. TERRE HAUTE
JACKSON, TENNESSEE. NEW SOUTHERN
ASHLAND, KENTUCKY. VENTURA
OWENSBORO, KENTUCKY. OWENSBORO
WACO, TEXAS. RALEIGH

Serving the Middle West

5000 ROOMS IN 8 STATES

True 'Fish Stories' to Win G-E Salesmen Island Voyages

CLEVELAND—Salesmen of General Electric air conditioning with the longest true "fish stories" will win trips to Bermuda and Havana this winter.

The fifth annual Climateers' Cruise, which starts Jan. 5, 1938, and lasts for nine days, is chief bait in the "master fisherman's contest," preliminary activity to determine cruise winners, according to J. J. Donovan, manager of the G-E air-conditioning division. Fish will be weighed in sales points rather than in pounds during the contest.

Hirsch to Handle Westinghouse In Columbus Area

COLUMBUS, Ohio—The Gustav Hirsch organization has been appointed distributor for Westinghouse Electric & Mfg. Co. air-conditioning equipment. The appointment was made by S. F. Myers, manager of air-conditioning sales for Westinghouse.

USE THE ZENITH REFRIGERANT FILTER

FOR SULPHUR DIOXIDE FREON OR METHYL CHLORIDE REFRIGERATORS

Because Zenith elements provide finer spacings (.002") than any asbestos sack or wire screen filter.

Easily Installed Easily Cleaned

Permanent Protection No Wool or Asbestos to Rot and Wear Out

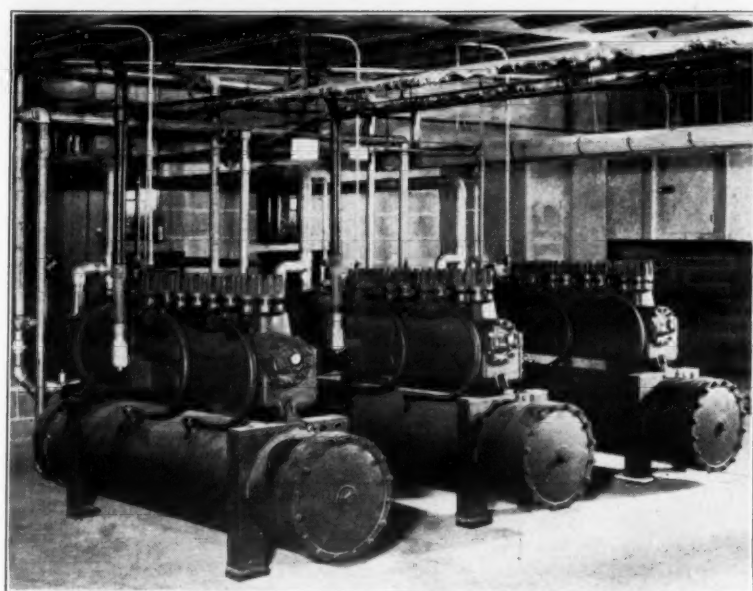
Corrosion Proof—Leak Proof

Ample Capacity

Positive protection against dirt in Expansion Valves, Solenoid Valves, Capillary Tubes and other liquid control devices.

ZENITH CARBURETOR CO.
Subsidiary
BENDIX AVIATION CORP.
Detroit, Michigan.

Three Machines for Efficient Cooling in a Theater



These three Westinghouse 40-ton refrigerating machines cool the new 1,800-seat Westown theater in Detroit. The compressors are independently controlled by three thermostats, each set about 1½° F. apart. Each compressor serves a pair of coils, which are located in the conditioning unit some 45 ft. above the level on which the compressors are situated. The

proprietors of the theater, who own a chain of picture houses, are pleased with the 3-machine setup because only one or two machines run during the week while the third cuts in to handle peak loads whenever necessary, declares J. F. Keller, sales manager for Mechanical Heat & Cold, Inc., distributorship which made the installation.

Estep Discusses Kelvin Home in Luncheon Series in South

DETROIT — Leslie G. Estep, Kelvinator's assistant sales manager of residential air conditioning, spoke before architects, builders, and mortgage experts in a series of Kelvin Home luncheons held in Southern cities during August.

Scientific design, a moderate price, thermostatic control with winter and summer air conditioning, adequate insulation, and a modern kitchen—these are the advantages which the "perfect home" should contain, Mr. Estep declared.

Arranged by distributing organizations, the Kelvin Home luncheons were held successively in Nashville, Tenn.; Knoxville, Tenn.; Birmingham, Ala.; and Charlotte, N. C. Similar luncheons were held previously in eastern and midwestern cities.

In Washington, D. C., Mr. Estep represented Kelvinator at the groundbreaking ceremonies of the Washington Post Kelvin Home, now being constructed by Paul T. Stone under the sponsorship of the Washington Post, daily newspaper.

Vigor-Aire Markets New Self-Filling Humidifier

PHILADELPHIA—An automatically controlled, self-filling humidifier, said to be capable of handling the winter requirements of an 8 to 10-room home or equivalent office or factory space, has been put on the market by Vigor-Aire Corp. here.

The humidifier fits on top of the radiator, and may be plugged into any electric light socket. A whirling bristle brush in the water chamber creates a fog, which humidifies and washes the air. Sales price of the unit is \$70, f.o.b. Philadelphia.

The PREFERRED Refrigerant for service work



MACHINE MAKERS LIKE ARTIE because its favorable combination of properties permits building compact, light-weight units that operate efficiently and economically.

Service Men like ARTIE because its high purity, wide distribution and ease of handling contribute to convenient, dependable work in recharging Methyl units.

DU PONT
E. I. Du Pont de Nemours & Co., Inc.
THE R. & H. CHEMICALS DEPT.
Wilmington, Delaware

Additional Air Outlets Solve Problem of 'Dead Spots' under Balcony

MILWAUKEE—By running additional outlets from the Carrier air-conditioning system employed in other parts of the Smartwear-Emma Lange, Inc., this women's apparel shop solved one of the problems encountered after the management had built a balcony at the rear of the store to provide display space for a line of small gift lamps and novelties.

Space under the balcony, normally used for the corset and foundation garment department, was unsuitable for a salesroom because of the pocket of dead air existing there after the balcony was built. In addition to this, the mezzanine floor, being close to the first floor ceiling, presented another problem in ventilation.

Before installing additional air-conditioning grilles, fans were tried to make the space beneath the balcony usable, but because the foundation garment department contained fitting rooms drafts had to be eliminated.

Since the change was made, a comfortable temperature has been maintained in the salesroom and fitting room and in the lamp display room, as well as throughout the store.

AT NO EXTRA COST...

these engineering features for display cabinet doors

THE new Ace "Loxit" hard rubber assembly units have deservedly won the enthusiastic endorsement of manufacturers as well as dealers—because of their notable engineering improvements. Complete "Loxit" units—doors... rails... jamba—at no increase in cost—include these up-to-the-minute structural features:

1. Locked-in, lift-out doors
2. Tightly closed overlap
3. Reduced air leakage
4. Roller bearings
5. Quiet closure
6. Lighter weight
7. Greater strength
8. Shock absorbing jamba

Available in a wide range of sizes—for regular Display Cabinet types. Storage and service doors, glazing strips, trim, etc. Manufacturers: Write for complete details and prices to

AMERICAN HARD RUBBER CO.
11 Mercer St., New York, N. Y.—Akron, O.
111 West Washington St., Chicago, Ill.

ACE "LOXIT" PATENTED DOORS

New Frick 'Purger' Claimed to Eliminate Air without Loss of Freon-12 Refrigerant

WAYNESBORO, Pa.—Recently introduced by the Frick Co. is a new "purger" said to be especially designed for the air-conditioning system using Freon-12.

The presence of air in the refrigerant system raises power consumption and reduces refrigerating capacity. It is difficult to remove it without wasting valuable refrigerant.

Purpose of the Frick purger is the easy removal of air without waste of refrigerant.

Research men doing advanced work on Freon-12 refrigeration will not start a laboratory test using this gas without first purging the system. Purging frequently reduces the head pressure as much as 25 lbs. gauge, even though the plant might have been carefully pumped out before it was charged.

The new Frick purger, like most equipment of the kind, operates on the principle that any of the refrigerant mixed with air and other undesirable gases will be condensed to a liquid by a cooling coil inside the drum, and separated in this manner from the gases that are to be blown off. The Frick purger is designed to operate at the highest possible pressure throughout the cycle, with improvement in economy.

The total pressure of a mixture of gases is equal to the sum of the pressures of each of the gases contained in the vessel. If one of the gases is ammonia or Freon-12, which can be condensed by lowering its temperature, the amount of this particular gas and the relative pressure exerted by it will depend upon how cold the vessel is kept.

By maintaining the total pressure inside the vessel as high as possible, the air and other non-condensable gases will form a larger proportion of the total mixture. It follows that when the purge valve is opened, the gases which are blown out will contain the absolute minimum amount of the refrigerant.

The full head pressure of the system is maintained in the purger by a connection through a valve to the bottom of the receiver. A finned pipe inside the purger acts as a cooling coil, the refrigerant being expanded through a valve and carried to the suction line.

As the mixture of the gases is cooled, those that are condensed are liquefied and fall to the bottom of the purger. This slightly reduces the pressure in the upper part of the vessel, and permits gas to flow to the top of the receiver and the condenser. Gas continues to flow as long as the purger is kept cold and any ammonia or Freon-12 which enters is liquefied rapidly.

As the non-condensable gases collect in the purger, the liquid refrigerant at the bottom of the vessel is pushed back into the receiver, the lowering of the level of the liquid being indicated on the gauge glass.

When the liquid reaches the bot-

tom of the glass, purging is begun. The gas blown off is displaced by liquid which rises from the receiver. When the liquid reaches to the top of the gauge glass, purging is considered complete.

This arrangement provides for returning the condensed liquid to the receiver automatically. Instead of depending upon a pressure-actuated relief valve on the outlet, which valve can only be set for the average pressure in the system, this purger maintains the maximum high pressure.

Address by Spangler to Open Jobber Meeting

(Concluded from Page 1, Column 3)

The board meeting, as well as all business sessions during the convention, will be held in Stevens hotel, official convention headquarters.

At least six committees are to be appointed—program, attendance, promotion, resolutions, credentials, nominating, and entertainment. Personnel of these committees will be announced shortly.

It is planned to have the entertainment committee cooperate with similar committees from other organizations whose meetings are being held at the Stevens during the same week.

The convention itself will be opened with an address by Mr. Spangler, who will review the year's activities and highlight the problems of the jobber and his association.

Reports of other officers probably will also be read at this time.

The afternoon session of the first day may be devoted to round table discussions of pertinent industry problems, to clear the way for action on these problems during the business sessions on Nov. 2.

One of the more important subjects which will be brought up before the convention will be the question of revising the association's by-laws involving eligibility for membership changes in dues structure, and methods of procedure.

Serve to Display Parts At Service Convention

(Concluded from Page 1, Column 5)

3. To the jobber in the merchandising of the parts and recognition of his place in the industry.

4. To the manufacturer in the resultant reaction of the advantage to the other groups, and in broadening and expediting the distribution of his genuine replacement parts.

Details of the distribution plan will be furnished to jobbers upon request, Mr. Reed announced. He also stated that Servel will have an exhibit at the displays held in connection with the Refrigeration Service Engineers Society convention in Chicago the first week in November.

Starting Next Week: Some Answers to the Profit Problem in Air Conditioning

In next week's issue will be published the first of a series of interviews with air-conditioning dealers who are conducting their business on a successful and profitable basis.

These interviews will present real "down-to-earth" information on how the dealer runs his business—how he marks up the cost of a job to obtain an adequate profit, what he adds to take care of the service guarantee, how he pays his salesmen, the kind of advertising he uses, and the many other factors that pertain to his business.

This announcement of the series is being made now, because the editors believe the articles contain information that no person connected with the sale of air-conditioning equipment will want to miss.

Air-Conditioning System Aids in Restoring Colonial Church to Original Appearance

SETAUKET, L. I.—Colonial dignity of the historic 208-year-old Caroline Episcopal church here has been restored, with Carrier conditioning as a substitute for the foot warmers carried by early parishioners.

Built in 1729, the Caroline church is the oldest on Long Island, and one of the oldest in the country. Renovated in 1885 to conform with Victorian style, a frescoed ceiling replaced the original barrel ceiling, pews were redesigned, and the original flagstone floor removed.

In a restoration program just completed, the original Colonial architecture and furnishings were reproduced as far as possible, and a Carrier air-conditioning system was installed to replace the old foot stoves which

Colonial worshippers carried.

These foot stoves, typical of the heating used in early American churches, consisted of a long handle to which a pan was attached. Hot coals were inserted at home, the heat escaping from holes in the top of the pan.

Prior to the installation of air conditioning, the church was heated by an antiquated one-pipe steam system. The exposed old-fashioned radiators marred the church interior appearance.

Interior of the building is now much the same as it was in 1729. In the future, however, heat will be circulated from hidden grilles, with humidity and temperature automatically controlled to correspond with outside weather conditions.



FUMES

Refrigeration fumes, mists and gases, often injurious, are no respecters of persons. They will attack your lungs as, when, and if exposed without regard for who, or what, you are. So, as a "must" bit of equipment, get a

CESCO

HEALTHGUARD FUME KIT

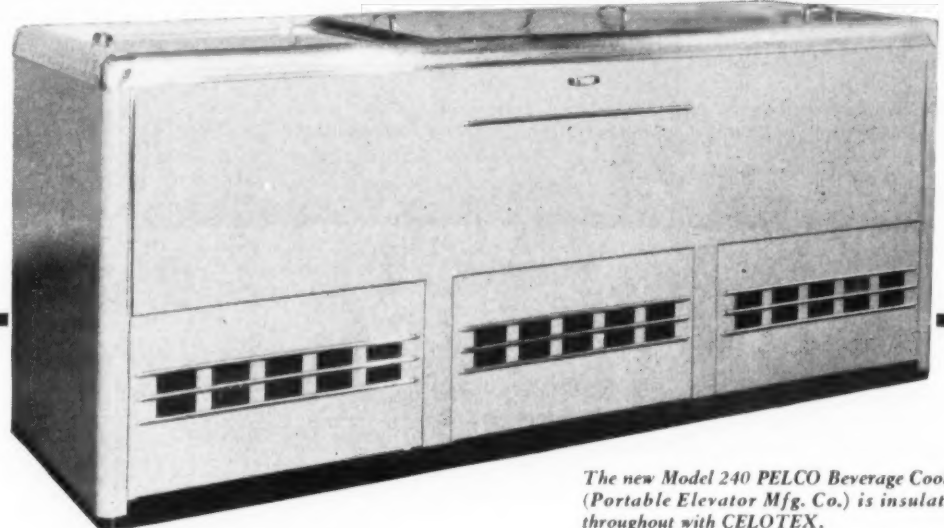
and be ready even when the fumes are said to be "light," on the general principle that only one whiff of Ammonia or Sulphur Dioxide or Methyl Chloride is more than enough.

NEAT AND LIGHT

The CESCO Healthguard Fume Kit is easy to carry, light and compact, and even a fellow who objects to "fussiness" won't object to the CESCO, for it can be put on or taken off with a twist of the wrist. It fits the face snugly without binding and the headband is adjustable.

Kit includes cartridges for Ammonia, Sulphur Dioxide, and Methyl Chloride. Write for details.

CHICAGO EYE SHIELD CO.
2352 Warren Blvd. CHICAGO, ILLINOIS



The new Model 240 PELCO Beverage Cooler (Portable Elevator Mfg. Co.) is insulated throughout with CELOTEX.

Another Famous Beverage Cooler Is INSULATED WITH CELOTEX

• To be sure of low operating cost and long service, the refrigerator engineers of the Portable Elevator Mfg. Co. insulated this smartly-styled Pelco Electric Bottle Cooler with Celotex Low Density Refrigerator Insulating Board.

They knew that Celotex provides lasting protection from heat leakage—proved by years of service in many thousands of beverage coolers, refrigerators, commercial cases, and cold storage plants.

Celotex is so widely used by leading refrigerator and bottle cooler manufacturers because it insulates and provides structural strength at one cost. It fits tight, and stays put

—can't shift or settle leaving any part unprotected. It is odorless, integrally waterproofed—and protected from dry rot, termites and fungus growth by the patented Ferox process (exclusive).

Another important reason why so many refrigerator engineers select Celotex is its lower assembly cost. It can be supplied in special shapes and forms pre-fabricated to fit any cabinet designs—saves time on the assembly line.

Write the Celotex refrigerator engineers any time for practical suggestions on refrigeration and air-conditioning insulation problems—no obligation.

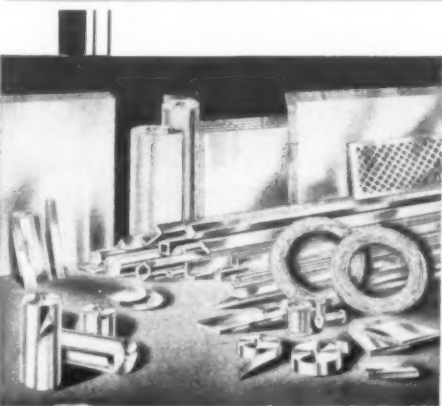
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BRAND—INSULATING CANE BOARD
Reg. U. S. Pat. Off.

REFRIGERATION INSULATION

Sales Distributors Throughout the World

THE CELOTEX CORPORATION • 919 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS



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When time must be saved . . . when you need copper quick, just reach for your telephone and call HUSSEY—general headquarters of the refrigeration and air conditioning industry for quality copper and brass products.

Hussey Copper Service is backed by the accumulated experience of 89 years of progressive specialization in copper manufacture from mining and refining to rolling and fabrication—a service that is 100 per cent COMPLETE. Write for the Hussey Catalog—you will find it a valuable source of information and a real time saver.

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Air Conditioning Made Easy—By F. O. Jordan

Field Engineering in Installing a Domestic Conditioning System

SECTION NO. 20-A The Domestic Load And Estimate

General

Air-conditioning field engineering is divided into three parts or classifications by Nature.

This is true because each of the natural parts or divisions into which the industry falls possesses its own characteristic problems which demand solutions peculiar to that division of the industry. Hence, each division demands special mental attitudes and characteristics in its own personnel, as well as special features in its methods or procedure.

These classifications depend upon the concentration of occupancy, so that we have the light occupancy project, the medium occupancy project, and the heavy occupancy project. Generally, however, the medium occupancy project is thrown in with the heavy occupancy classification for the sake of simplicity, leaving the light occupancy or "domestic" and the heavy occupancy, or "commercial" classifications to be considered.

In previous sections, loads and load estimates have been discussed in general. However, some types of loads are unimportant or non-existent in certain branches of the industry. Therefore, it is possible and desirable to formulate simplified methods of load computation for a given branch or division of air conditioning by omitting or estimating only roughly the unimportant loads, and by accentuating loads which are important to that particular type of work.

In the air-conditioning industry, never-ending efforts are being made to reduce the cost of its products for the sole purpose of placing them

within the financial reach of a greater number of air-conditioning-minded persons, so that the volume of production may be increased and advantage taken of the savings which result from the methods of mass production as practiced so notably in the automotive industry.

Since a considerable portion of the ultimate consumer cost of air conditioning consists of the cost of the field engineering required to insure its satisfactory performance, and easily-applied field engineering methods tend to reduce field engineering costs and permit a greater volume of air conditioning to be engineered by the available number of field engineers, it is very desirable to simplify field engineering methods as much as possible without overlooking factors of such importance that their effect upon the load may not safely be ignored.

However, simplification cannot be carried out in exactly the same way with all classes of air-conditioning projects, because factors whose importance is negligible upon certain types of projects may be the most important load factors in the case of other types.

For example, the loads attendant upon occupancy are relatively unimportant when calculating the total load in the average lightly occupied residence where the greatest load may result from exposure to sun. But in night clubs and theaters the condition may be completely reversed, as the sun's direct heat may be of but little importance, while the heavy occupancy and its attendant loads may constitute practically the entire load.

For this reason, in residential work the effect of occupancy may be included in the most simple factors, but accuracy must be observed when estimating sun effect, while the re-

verse is true when preparing the theater load estimate.

Therefore, as stated above, field engineering generally is divided roughly into two general classifications, one being comprised of light occupancy projects where the concentration of occupants is fewer than one person per 25 square feet of floor area, and the other classification being made up of air-conditioning projects of heavier occupancy concentrations, generally heavier than one person per 25 square feet of floor space.

When estimating the air-conditioning load in residential work, load factors depending upon occupancy may be disposed of without jeopardizing the results by the use of simple factors, care being exercised when computing transmission and sun loads, while sun and transmission loads become subordinate to occupancy and attendant loads for the project of heavy occupancy.

In a previous section, the complete unabridged method of load computation is explained to assist in arriving at a complete understanding of the principles involved in making the load estimate, and perhaps for use in estimating certain projects of medium occupancy concentration where all loads may be of such importance that they require careful consideration.

In this section, we will consider that branch of the industry often known as "domestic air conditioning," by which is meant the classification of light occupancy concentration (one person per 25 square feet or more of floor area), which includes the majority of homes and many offices.

In the past, the dollar volume of domestic air-conditioning sales has been much less than the dollar volume of commercial air-conditioning sales because the purpose of the former is primarily for the comfort of the purchaser and his family, while the

latter is looked upon by the buyer as an investment from which he expects immediate returns in the form of an increased number of more comfortable customers.

However, much of the investment in the air-conditioning industry by manufacturers and distributors is based upon the hope that the domestic branch will swell until it is the major portion of the industry. But before the volume of domestic air-conditioning sales can be greatly increased, its products must be made

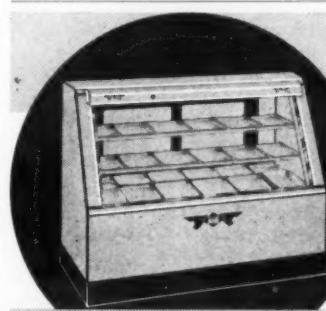
available for the great middle financial class of moderate incomes by a considerable reduction in selling price.

Since a considerable proportion of the price to the customer for air conditioning is composed of field engineering, savings in field engineering costs have a considerable influence on the price for the installed product which the customer must pay.

Good judgment by the field engineer can cut costs in many ways. For example, there is the matter

(Continued on Page 15, Column 1)

THE BUYER'S GUIDE



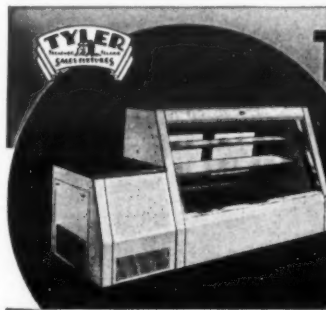
SHERER'S New Delicatessen Case

Restyled—improved—increased value—all significant features of Sherer's constant efforts to make SHERER Equipment easier to sell for its dealers and distributors.

Addition of this modern, fast-moving line of store equipment will bring added profits to you. Write for details about the Sherer Case and Cooler Franchise. Some desirable territories still available.



SHERER-GILLET CO., MARSHALL, MICHIGAN
Display and Storage Equipment for Retail Food Stores



TYLER'S WELDED STEEL Cases

1937 line offers wide variety and sensational values. 6 big new features and iron-clad guarantee. Only Tyler gives one-piece "welded steel" construction, 100% insulation. Wonderful sales opportunity. Most talked of and fastest selling line on market. WRITE today.

TYLER Sales-Fixture COMPANY
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SIX BIG NEW FEATURES



The HOLCOMB & HOKE NEW DEALER PLAN—

offers you an exclusive franchise which includes a complete line of Dulux and porcelain cases—market coolers and boxes . . . priced to meet all competition.

Our New Dealer Finance Plan advances you more cash per sale.

We furnish the products and finance the sales.

All We Ask You to Do Is **SELL!**

Write, Wire or Phone At Our Expense for Full Particulars.

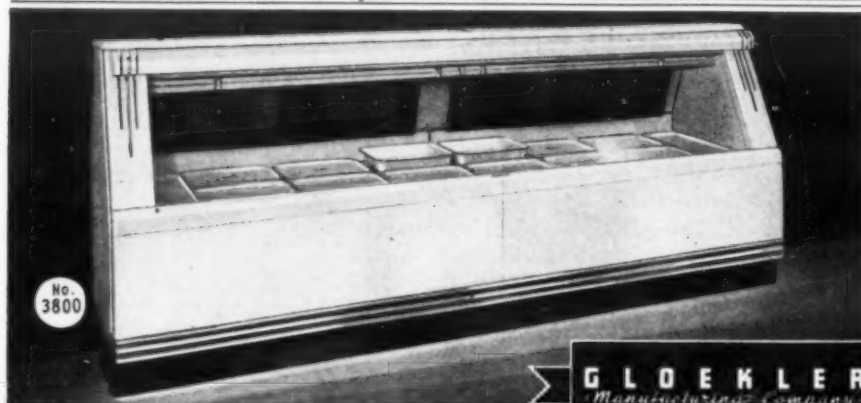
HOLCOMB & HOKE MFG. CO.
1545 E. Van Buren St. Indianapolis, Indiana

Table 28—Air Delivery Duct Capacities—Rectangular Ducts and Equivalent Round Ducts

Width	7 Inches Deep			8 Inches Deep			9 Inches Deep			10 Inches Deep		
	Round Pipe Equiv. Diam.	Static Pressure .08	Static Pressure .10	Round Pipe Equiv. Diam.	Static Pressure .08	Static Pressure .10	Round Pipe Equiv. Diam.	Static Pressure .08	Static Pressure .10	Round Pipe Equiv. Diam.	Static Pressure .08	Static Pressure .10
3	5.0	50	65	5.2	60	70	5.5	65	70	5.8	75	80
4	5.8	75	95	6.1	90	105	6.5	100	110	6.8	115	130
5	6.5	100	125	6.9	120	140	7.3	140	155	7.7	160	180
6	7.2	130	155	7.6	155	170	8.0	185	200	8.4	210	230
7	7.7	160	185	8.2	195	210	8.7	230	250	9.2	260	285
8	8.2	195	220	8.8	235	250	9.3	275	300	9.8	315	340
9	8.7	230	255	9.3	275	290	9.9	320	350	10.4	370	400
10	9.2	265	295	9.8	315	330	10.4	370	400	11.0	425	460
11	9.6	300	325	10.2	355	375	10.9	420	450	11.5	480	520
12	10.0	335	365	10.7	395	420	11.4	470	500	12.0	535	580
13	10.4	370	405	11.1	440	465	11.8	520	555	12.5	590	645
14	10.8	405	445	11.5	485	515	12.3	570	610	12.9	650	710
15	11.1	440	485	11.9	530	565	12.7	620	670	13.4	710	775
16	11.4	475	525	12.3	575	615	13.1	675	730	13.8	775	840
17	11.8	510	565	12.6	620	675	13.5	730	790	14.2	840	910
18	12.1	545	605	13.0	665	725	13.8	785	850	14.6	905	980
19	12.4	580	645	13.3	710	775	14.2	840	915	15.0	970	1055
20	12.7	615	685	13.6	755	825	14.5	895	980	15.4	1040	1130
21	12.9	650	725	13.9	800	875	14.9	950	1045	15.7	1110	1205
22	13.2	690	765	14.2	845	925	15.2	1005	1110	16.1	1180	1280
23	13.5	730	805	14.5	890	975	15.5	1060	1175	16.4	1250	1355
24	13.8	770	850	14.8	935	1025	15.8	1120	1240	16.8	1320	1430
25	14.0	810	895	15.1	980	1080	16.1	1180	1305	17.0	1390	1505
26	14.3	850	940	15.4	1030	1135	16.4	1240	1370	17.3	1460	1585
27	14.5	890	985	15.6	1080	1190	16.7	1300	1435	17.6	1530	1665
28	14.8	930	1030	15.9	1130	1245	17.0	1360	1500	18.0	1605	1745
29				16.1	1180	1300	17.2	1420	1570	18.2	1680	1825
30				16.4	1230	1355	17.5	1485	1640	18.5	1755	1910
31				16.6	1280	1410	17.7	1550	1710	18.8	1830	1995
32				16.9	1330	1465	18.0	1615	1780	19.1	1905	2080
33							18.2	1680	1850	19.3	1980	2165
34							18.5	1745	1920	19.6	2055	2250
35							18.7	1810	1990	19.8	2130	2335
36							19.0	1880	2060	20.1	2205	2420
37										20.3	2280	2505
38										20.6	2355	2590
39										20.8	2430	2675
40										21.1	2505	2760

Note: Air deliveries are in c.f.m. Static pressures are in inches of water. Duct dimensions are in inches.

The New GLOEKLER Streamline DELICATESSEN CASE



FIRST IMPRESSIONS COUNT—and your merchandise displayed in this new full-vision streamlined case will not only make an impression, but will actually make sales.

Available in Single or Double Duty style, in four sizes, with your choice of durable Dulux finish or gleaming white Porcelain.

Triple-thick glass-removable porcelain shelf-diffusion type coils-copper tubing and fins.

Economical operation-durable construction-attractive appearance.

WRITE FOR COPY OF FOLDER 3800 WITH COMPLETE DESCRIPTION

GLOEKLER MFG. CO. PITTSBURGH, PA.
Manufacturing Company

SPECIAL DESIGNS BUILT TO ORDER
MANUFACTURERS OF ALL TYPES OF COMMERCIAL REFRIGERATORS AND CASES

NEW

KOCH ECON-O-CASE

WELDED ALL-STEEL CONSTRUCTION

CORKBOARD INSULATION

TRIPLE GLAZING

HUMIDITY AND TEMPERATURE IN PERFECT BALANCE

THE PRICE LEADER OF A BIG LINE

DISTRIBUTORS WILL BE INTERESTED

WRITE KOCH REFRIGERATORS TODAY

EXPORT DEPT. 304 E. 45TH ST. N.Y. CITY

Ways to Cut Equipment Costs in Domestic Air-Conditioning Installations

(Continued from Page 14, Column 5) of house insulation. To air condition the uninsulated home of average construction for summer comfort is practically out of the question, because both the first and operating costs of air-conditioning equipment of sufficient capacity to maintain comfort during hot weather in the ordinary uninsulated residence would be out of reason. Therefore, the first step in engineering the air-conditioning system for such a house is to induce the owner to insulate it properly.

Another important step is to arrive at a practicable decision as to conditions to be maintained, occupancy concentrations, etc.

The problem differs somewhat from that of the commercial installation. For in many commercial installations where buildings are unoccupied over a considerable portion of the 24-hour day, or which are not in use over weekends or holidays, a considerable surplus in refrigerating capacity must be provided so that comfort can quickly be restored after shutdowns. However, the home business is a 24-hour proposition practically every day, so that no frequent periodic shutdown period of any extent occurs.

Therefore, excessive refrigerating capacity for the rapid cooling of already heated buildings is unnecessary in residential air conditioning, so that a great saving in cost without danger to comfort may be effected in the residence by installing only enough refrigeration to keep the building cool, provided that operation is started as soon as sunshine and outside temperature go above the level of comfort.

Furthermore, the average home or office owner prefers to pay a more moderate price for equipment which will maintain a 10° differential during ordinary hot weather with a 15° differential during extreme "heat waves," than to pay the much higher price of equipment guaranteed to maintain so-called ideal inside conditions of 72° effective temperature while the outside temperature soars above 100° in the shade. A thorough understanding with the customer should be had upon this point.

Considerable savings may be effected also, and sales made, because of logical assumptions as to the occupancy whose frequency or duration

is sufficient to justify its use as a basis of design.

For example, a home may at infrequent intervals house 25 guests, although its normal occupancy may be but three or four persons, or an office may accommodate 25 occupants during an occasional conference, although it may normally be occupied by one individual.

In either case, the owner generally will not wish to pay for the perfect comfort of occasional large crowds of visitors, but will much prefer to purchase comfort for regular occupants, with some relief for visitors should they chance to be present during extremely hot daytime periods.

Good judgment used in deciding design conditions often has a very desirable influence upon sales. Within limitations, cutting the selling price does not mean reduced profit, it means a smaller profit per sale, but a great many more sales.

Generally speaking, the engineering problem involved in domestic engineering work consists of the following parts:

1. Estimating the load.
2. Selecting the equipment.
3. Designing the distribution system.

If the project consists of a single office or residential room, the equipment selection is based upon the load estimate for the room as described in previous sections, no distribution system being necessary as a rule.

If the project consists of a single of offices with several rooms, and is to be air conditioned by a central system with distributing ducts, the air-conditioning equipment is selected upon the basis of the load upon the entire dwelling or suite, so that it is unnecessary to compute the load separately upon each individual room in order to select the central equipment.

However, if no more were done than this, there would be no basis upon which to design the air duct system, for the necessary size of the duct to each room would be unknown.

For taking care of this problem, several methods are in use. Some of them are as follows:

Method No. 1.

A. Compute the loads upon each room and add them together to determine the load upon the entire project.

(Concluded on Page 16, Column 1)

Table 29—Duct & Grille Design

PART ONE

For uninsulated residences and for all residences with less than 1,800 sq. ft. of floor area. (Total floor space of all heated rooms.)

Total air delivery (c.f.m.)=0.8×sq. ft. floor area served by unit.*

Cross-sectional area plenum duct (sq. in.)=0.30×air delivery through duct, or 0.25×sq. ft. floor area served by duct.

Air delivery through branch duct (c.f.m.)=0.8×sq. ft. floor area served by duct.*

Cross-sectional area branch or "main trunk" duct (sq. ft.)=0.25×air delivery through duct, or 0.20×sq. ft. floor area served by duct.

Gross face area return grille (sq. in.)=0.40×sq. ft. floor area served by grille.

Cross-sectional area return duct (sq. in.)=0.25×sq. ft. floor area served by duct.

Gross face area supply grille (sq. in.)=F×sq. ft. area of room served by grille where F=Factor taken from Table No. 32.

PART TWO

For insulated residences and for all residences with greater than 1,800 sq. ft. of floor area. (Total floor space of all heated rooms.)

Total air delivery (c.f.m.)=0.6×sq. ft. floor area served by unit.*

Cross-sectional area plenum duct (sq. in.)=0.25×air delivery through duct, or 0.20×sq. ft. floor area served by duct.

Air delivery through branch duct (c.f.m.)=0.6×sq. ft. floor area served by duct.*

Cross-sectional area branch duct (sq. in.)=0.20×air delivery through duct, or 0.15×sq. ft. floor area served by duct.

Gross face area return grille (sq. in.)=0.30×sq. ft. floor area served by grille.

Cross-sectional area return duct

(sq. in.)=0.20×sq. ft. floor area served by duct.

Gross face area supply grille (sq. in.)=F×sq. ft. area of room served by grille where F=Factor taken from Table No. 32.

Note: Air delivery for entire building must be based upon floor area of entire portion of building whose heating or cooling load the unit is to carry.

Air delivery for room must be based upon floor area of room plus floor area of adjacent halls, etc. when such adjacent areas are to be heated or cooled by air circulation from room.

*These factors are for rough estimate only. The actual air delivery will be as determined by the air-handling capacity of the air-conditioning unit which is used.

Table 32

AIR THROW FOR STANDARD "DIRECTIONAL" TYPE GRILLES

(This table is especially prepared for use in connection with residential and office projects whose occupancy does not exceed one person per 25 sq. ft. of floor space.)

Note: To determine gross face area of supply grille (sq. in.), multiply square feet of floor area, served by grille, by the following factors:

Horizontal Distance (Ft.)	Vertical Fall (Ft.)	Difference Between Room and Discharge Air Temperatures		
		10°	15°	20°
		Factors		
10	2	.65	.52	.434
10	4	.744	.65	.578
15	2	.52	.434	.289
15	4	.65	.52	.434
20	2	.289	.200	.163
20	4	.434	.289	.236
25	2	.163	.130	.100
25	4	....	.200	.163
30	2	.118	....	....
30	4	.173	.153	.118
35	2	....	....	....
35	4	.137	.118	....
40	2	....	....	....
40	4	.093	....	....

THE BUYER'S GUIDE



PROOF OF THE PUDDING—

It takes three full typewritten pages to outline the many advantages of the Peerless Flash Cooler—and its features are so unusual that you might even then be skeptical. However, they say "The Proof of the Pudding is in the Eating," so here's a good big bite of proof.

The picture at the left offers concrete evidence of the high regard in which this unit is held. The installation is located in a walk-in box in the kitchens of a new and modern men's dormitory at one of the most progressive universities in the country. Two other Flash Coolers complete the refrigeration equipment in these kitchens. The multi-louvered drip pans on these units are especially constructed of stainless steel to match other kitchen fixtures.

These Flash Coolers have more than met the exacting specifications of the installation. And they'll do as much for you if you give them a chance.

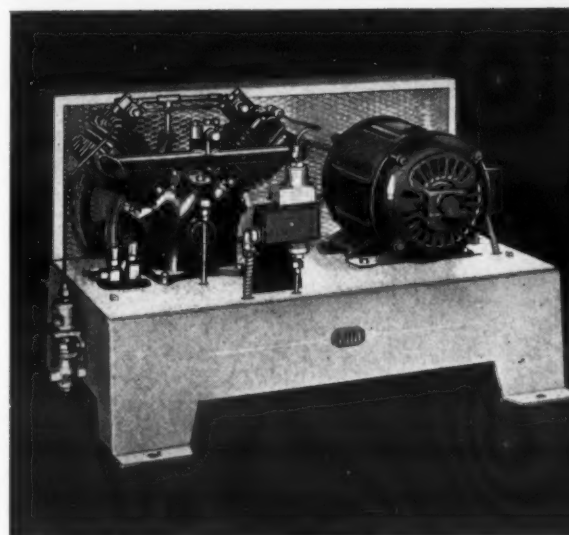
PEERLESS of AMERICA, Inc.

ESTABLISHED IN 1912 AS THE PEERLESS ICE MACHINE COMPANY

New York Factory 43-20 34th Street Long Island City
Main Factory—General Offices 515 West 35th Street Chicago
Pacific Coast Factory 3000 S. Main Street Los Angeles

PEERLESS JOBBERS IN ALL PRINCIPAL CITIES

BUY PEERLESS FOR PERFORMANCE



PAR WATER COOLED HIGHSIDES

PAR water cooled highside units are made in ten popular models, 1/3 to 10 horse power motor size. Employing the most advanced engineering design for high capacity and long life.

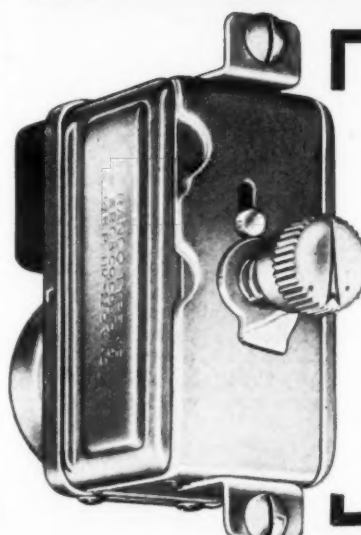
Multiple cylinders of large capacity insure very low operating speeds. Sizes 1/3 to 1 horse power are two cylinder pumps. Sizes 1 1/2 to 10 horsepower are V type four cylinder pumps.

All water cooled models are equipped with finned tube and shell condensers, having a radiation surface of 25 square feet to each horse power. Large finned surface reduces water consumption.

A finned tube super heat remover is used between compressor and condenser, which reduces the gas temperature before entering the condenser, greatly increasing efficiency.

The water valves are rigidly mounted to the base, requiring minimum of piping. All units completely wired ready for installation. Motors equipped with cooling fans.

MODERN EQUIPMENT CORPORATION
DEFIANCE - OHIO - U.S.A.



Ranco EXACT REPLACEMENTS

In taking refrigerator thermostats out of the "handle with care" class Ranco paved the way for bigger profits for service men. Stainless Steel not only completely eliminates the breakage hazard—it has made possible entirely new standards of strength, precision and all round serviceability in domestic refrigerator controls. Write for Bulletin showing Ranco Exact Replacement Units.

RANCO, Inc., Columbus, Ohio.

COOLING EQUIPMENT that opens a NEW MARKET



PELCO Beverage and Food COOLERS.

PELCO is different—faster, more efficient than any cooler you've ever seen! Combination models cool bottled beverages in top (wet) compartment. The lower (dry) compartment may be used for foods or pre-cooling beverages. PELCO makes its own floating ice automatically, as needed. Just count the prospects near you! And, remember—PELCO cools bottled beverages from room temperature to desired degree in 30 minutes—hotels, taverns, restaurants, stores

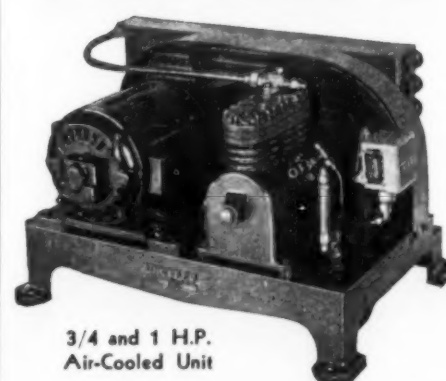
Get the facts now. Write Desk A97.

Mfg. by Refrigeration Division
PORTABLE ELEVATOR MFG. CO.
BLOOMINGTON, ILLINOIS

in Canada
Universal Cooler Co. of Canada, Ltd.
Brantford, Ontario



DICELER 4 CYLINDER UNITS



3/4 and 1 H.P.
Air-Cooled Unit

Modern Compressor Units for Modern Refrigeration and Air-Conditioning applications are found in Diceler Four Cylinder Units. A compressor for every refrigeration need may be selected from the complete line of models from 1/4 hp. to 30 hp.

A study of DICELER features outlining the exacting methods of construction and the high grade material used, will explain why DICELER has found favor in the eyes of experienced engineers. Write for catalogue.

DEISSLER MACHINE COMPANY
Greenville, Pa.

Over a sixth of a century in electric refrigeration

Methods of Designing Air Duct Systems In Domestic Installations

(Concluded from Page 15, Column 2)

B. Select the control equipment from the manufacturer's performance tables upon the basis of the load upon the entire project.

C. Determine the required airflow to each room by pro-rating the total air delivery of the central equipment selected according to the load upon each room.

D. Determine the required duct size to each room from the air required by the room from Table 28.

Method No. 2.

A. Compute the load upon the

entire project as though it were one room.

B. Select the control equipment from manufacturer's performance tables upon the basis of the load upon the entire project.

C. Determine the duct size to each room by multiplying the volume, or the floor area of each room by a factor.

For example, in Table 29 (parts 1 and 2) are listed factors by means of which the cross-sectional area in square inches of the duct to a room may be determined by multiplying the floor area of the room in square

feet by the factor.

Obviously, the load upon a given room does not depend entirely upon floor area, so that the heat loss or gain could not be accurately determined from the floor area. However, these factors are not used in determining the load, they are used merely to determine the required duct and grille size, and the factors have been so selected that the duct and grille size will be ample if the room is heavily exposed, but will be only slightly oversized if the room is lightly loaded.

After a system designed in this manner is installed, it will be necessary to balance the air distribution by adjusting the volume dampers. This, of course, would be necessary with any other method of design.

It is possible to go still further in simplifying the method of equipment selection by rating various units in cubical contents of the buildings which they will serve, provided that such ratings are set up for insulated and uninsulated houses and for different sections of the country in which there is considerable variation in prevailing temperatures.

Some very technically minded engineers experience great pain over any steps toward simplification because of the fact that simplified engineering methods cannot take into account small details, and will in some cases result in slightly oversized equipment. However, simplified engineering methods for use in the domestic air-conditioning field must be adopted, before this industry can be developed to any considerable dimensions.

It is customary to design trucks in various standardized capacities such as 3-ton, 5-ton, 10-ton, etc. If a customer requires a truck which has a capacity of a eight tons, he buys a 10-ton truck, even though this truck is slightly larger than he requires. It would be possible to design and build a special truck of 8-ton capacity for this particular customer but if the truck business were carried on in this manner, there would be only about a dozen companies in the United States that could afford the luxury of a truck.

Generally, there are two types of loads to be estimated in domestic work, cooling and heating.

Method No. 3.

A. Compute the load upon each room.

B. Compute the air delivery required by each room in order to carry the load upon the room by deciding upon a temperature differential between room temperature and entering air temperature, and computing the air delivery necessary to carry the sensible load of the room with the assumed temperature differential.

This is accomplished by means of the following relationship:

$$A = \frac{H_s \times \text{Vol}}{\text{TD} \times 15}$$

where:

A = cubic feet per minute of air required.

H_s = Sensible cooling load computed for room, in B.t.u. per hour.

Vol = Cubic feet per pound of air at entry condition (see air property table 8).

TD = Temperature differential in degrees F. between the dry-bulb temperature of the air in the room and the air entering the room.

For example, assume the following:

Sensible load=6,000 B.t.u. per hour.

Room condition=80° dry bulb and 50% relative humidity.

Entering air condition=60° dry bulb approximate saturated.

$$A = \frac{6,000 \times 13.33}{20 \times 15} = 267 \text{ c.f.m.}$$

C. Determine the required duct size to each room from the air required by the room from Table 28.

D. Select the equipment with sufficient sensible capacity to cool the total air quantity required by all of the rooms through the assured temperature differential.

In the case of the suite of offices, the duct system for the central system air-conditioning equipment may or may not be required to transmit hot air for heating service as well as cooled air for cooling service, but in residential work, the same duct

system almost invariably serves for both heating and cooling. No difficulty need be encountered because of this fact, however, because, although the heating load in B.t.u. per hour generally is three or four times as great as the cooling load, it is a simple matter to carry both loads with the same quantity of air because the temperature differential between entering and room air in heating service may be three or four times as great as the temperature differential between room and entering air in cooling service.

CLASSIFIED ADVERTISING

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Air Conditioning and Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS AVAILABLE

OPPORTUNITY FOR EXPERIENCED ELECTRICAL ENGINEER WITH COMPLETE KNOWLEDGE OF ELECTRIC RANGE DESIGN AND MANUFACTURE. REPLY SHOULD GIVE COMPLETE DETAILS EDUCATION, PRACTICAL EXPERIENCE, SALARY EXPECTED. BOX 975, AIR CONDITIONING AND REFRIGERATION NEWS.

FOUR CARRIER air conditioning dealers in midwestern states need experienced commercial refrigeration men to manage commercial refrigeration sales department. Salary plus commission and bonus. Please write stating experience, qualifications, and references. Box 966, Air Conditioning and Refrigeration News.

CREDIT MAN—A real opportunity for a man who understands credit and office control problems of manufacturer selling through distributors. Experience in home appliance field preferred but not necessary. Position will be with leading manufacturer of refrigerators, washing machines, and radios located in Indiana. Apply to Box 973, Air Conditioning and Refrigeration News.

REFRIGERATION ENGINEER to take complete charge of the technical and supervision end of refrigeration business. Must be thoroughly familiar with technical and practical side of commercial refrigeration and air conditioning. Would consider taking successful man into business later. Northwest location. Write giving full details and desired salary. Box 974, Air Conditioning and Refrigeration News.

POSITIONS WANTED

YOUNG MAN, 27, graduate electrical engineer, 5 years electrical and refrigeration experience desires connection with first rate air conditioning manufacturer. Particularly interested in engineering application training leading to engineering sales. Hard working, pleasing personality, good recommendations. Box 976, Air Conditioning and Refrigeration News.

FRANCHISES AVAILABLE

EXPORT SPECIALISTS solicit accounts of manufacturers interested in exploiting foreign markets for their products on a commission basis. Great interest being shown abroad in air conditioning equipment, refrigeration, controls, self-contained room coolers, household refrigerators, etc. Box 969, Air Conditioning and Refrigeration News.

SALES ENGINEER calling upon commercial refrigerator manufacturers on west coast. To the right man exclusive representation will be given to a basically new cooling unit for display cases and reach-ins having no competition and performance never before obtained. Give full information first letter. BETZ CORPORATION, Betz Building, Hammond, Indiana.

COMMERCIAL DEALERS to sell our complete line of display cases, refrigerators, walk-in coolers, etc. We manufacture equipment of all sizes. Sell with your present line of machines or with our line of compressors if desired. Attractive dealer's discount with financing arrangement for your sales. Write for full information. H. EHRlich & SONS MFG. CO., Station D, St. Joseph, Mo.

BUSINESS OPPORTUNITY

WELL ESTABLISHED refrigerator and general household appliance business, retail and wholesale. All leading lines, making money. Good live city, prosperous farming country. No crop failures. Will sell all or part interest. No real estate, low rent. Owner wishes to retire. Box 968, Air Conditioning and Refrigeration News.

EQUIPMENT WANTED

SURPLUS STOCKS, complete electric refrigerators, laundry equipment, radios. Specify year of manufacture; description, lowest price F.O.B. Chicago, Illinois; and if in original packing. Address replies Box 971, Air Conditioning and Refrigeration News.

EQUIPMENT FOR SALE

SERVICEMEN AND DEALERS save money. Buy "used as is" refrigerators. Spray and recondition them yourself. Kelvinators \$14.00 up; Frigidaires \$15.00 up; Copelands \$15.00; Bohns \$15.00; General Electrics \$19.00; Majestics \$15.00; Electrolux \$25.00; others \$10.00. Closeout 1936 Stewart-Warners at 50% discount. PILGRIM REFRIGERATION CO., 45-33 50th St., Woodside, Long Island, N. Y.

CARTER RUST PREVENTATIVE, 135 gallons. Make offer for lot. REFRIGERATION SUPPLY CO., 1612 14th St. N.W., Washington, D. C.

WE HAVE ON HAND brand new, in original crates, several Larkin vacuum plate coils 7" and 16" wide and 80", 104" and 128" long which we offer at from 1/4 to 1/2 of list price and subject to prior sale. We solicit your inquiry by wire, phone, or letter. A real bargain is offered in this type of coil for anyone interested. HOLCOMB & HOKE MFG. CO., 1545 Van Buren St., Indianapolis, Ind.

FOR SALE—25 used coin meters for use on electric refrigerators. Excellent condition. \$2.75 each. Specify hour gears wanted. HULL ELECTRIC CO., 119 South Santa Fe, Salina, Kansas.

REPAIR SERVICE

CONTROLS REPAIRED for the refrigeration and air-conditioning trade. Any make, almost any type. Every control individually calibrated. Steam traps, packless valve glands, and regulators repaired. If it contains a bellows, Halco Electric can repair it. Service prompt, prices right, guarantee reliable. HALCO ELECTRIC LABORATORY, 1793 Lakeview Road, Cleveland, Ohio.

DOMESTIC REFRIGERATION controls repaired. Ranco pencil types, \$1.75. General Electric, Cutler-Hammer, Tag, Penn, Ranco box types, \$2.00. Bishop Babcock, Majestic, Penn magnetic switches, \$2.50. Each control individually calibrated to factory specifications. UNITED SPEEDOMETER REPAIR CO., INC., 436 West 57th St., New York City.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Westinghouse Portfolio Shows Small Appliances

MANSFIELD—A black simulated leather portfolio, containing 10 illustrations of new appliances and a page of descriptive copy on each, is being used by Westinghouse Electric & Mfg. Co. to introduce to dealers feature items in its new line of small appliances.

Equipment presented includes a new coffeemaker, sandwich grill set, casserole, toaster set, percolator, toaster, hostess set, and curling iron.

THE BUYER'S GUIDE

SIX NEW CASES BY WEBER New Steps to PROFIT




The most complete line of Refrigeration Equipment—New Streamlined Beauty—Unchallenged quality. Exclusive Territories Now Available—Complete Financing Plan.

Established 1902—
Cable Address: "WEBERCO"

Weber Showcase & Fixture Company, Inc.
5700 Avalon Boulevard Los Angeles, California

TYLER'S WELDED STEEL REACH-IN BOX



SALES SENSATION OF 1937

Big waiting market for food stores, restaurants, bakeries, tap rooms. New principle "Stratosphere" cooling. Maximum efficiency and capacity in small floor space. Dealers report tremendous demand. Big sales opportunity. Write today.

TYLER Sales-Fixture COMPANY
DEPT. EX. NILES, MICHIGAN

KASON PAPER CUTTERS



These are exceptionally fine paper cutters made especially for attachment to refrigerator display cases. The three models illustrated are made in the following finishes: Cadmium Plated, Nickel Plated and Chromium Plated. All models are equipped with a special Steel-Roller-Rod which prevents excessive rolling of the paper when the roll is low. These and many other items of supplementary hardware for the refrigerator are presented in Section "D" of our new catalog No. 38. Write for copy.

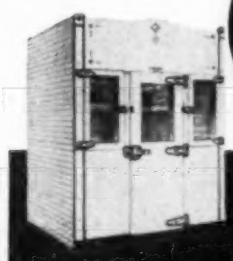
KASON HARDWARE CORP'N.
127-137 Wallabout St. Brooklyn, N. Y.

Illustration of the special Steel-Roller-Rod used in the Kason Paper Cutters.

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DISTRIBUTORS! Increase your sales and earnings on electrical refrigeration equipment by selling the Percival Line. Percival equipment meets every requirement of the modern food store.

For Mechanical Refrigeration Only



C. L. PERCIVAL COMPANY
DES MOINES IOWA
51 YEARS OF SERVICE 1886-1937

DESIRABLE TERRITORIES still available. Write for details of attractive, profit-making franchise.

COMPLETE AND MODERN



LINE OF COMMERCIAL HARDWARE FOR EVERY APPLICATION

GRAND RAPIDS BRASS COMPANY
GRAND RAPIDS, MICHIGAN

QUESTIONS

Tray & Grid Makers

No. 3103 (Manufacturer, Michigan)—"Will you kindly send us the names of manufacturers of ice cube trays and grids."

Answer: Manufacturers of ice cube trays and grids are listed on pages 278 and 279 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY. Work is now going on in preparation of the 1937 Directory.

Ontario Cheese

Refrigeration Financing

No. 3104 (Manufacturer, Ontario)—"On page 10 of the July 28th, 1937 AIR CONDITIONING AND REFRIGERATION NEWS there is an article headed 'Ontario Will Help Finance Cheese Refrigeration.' In this article it mentions that the new regulation which became effective June 2 makes it compulsory for freshly made cheese to be held in storage at the factory at least eight days before shipping. It also mentions the Provincial Government's offer of financial aid."

We are unable to verify these statements and would like to know

by whom this article was written in order that we could obtain more details on this subject."

Answer: The regulation on cheese factories was issued by the Dominion department of agriculture at Ottawa. The announcement concerning financing aid by the Province of Ontario was made by Premier M. F. Hepburn at St. Thomas, Ont., on the afternoon of July 16. We believe that additional information could be obtained by writing Premier Hepburn's office at Toronto.

Cabinet Materials

No. 3105 (Manufacturer, Ohio)—"We are interested in getting information as to the material used in the construction of the various refrigerator cabinets and a list of the manufacturers of these cabinets."

What we are mainly interested in knowing is the type of 'breaker strip' used in the various cabinets. We would like to have this information for comparison purposes with the new type breaker strip that we have recently developed.

We believe this information specifying the type of breaker strip used on the cabinets would be contained in the 64-page booklet that you advertise giving specifications of principal makes of 1937 household electric refrigerators; if it is, then you may send us a copy of this booklet and your invoice to cover it."

Answer: Specifications of household electric refrigerators have been pub-

lished every year for the last few years. In this year's tabulation information on breaker strips was not included; but it was included last year in the July 1, 1936, issue of AIR CONDITIONING AND REFRIGERATION NEWS. This might give you some indication of the trend in this particular line of equipment.

Railway & Airliner Cooling Systems

No. 3106 (Manufacturer, New Jersey)—"We are particularly interested in the subject of air conditioning of railroad cars and airliners. It will be very much appreciated if you will supply us with any data you may have available regarding this type of air conditioning."

It will be appreciated also if you will supply us with the names of the companies manufacturing equipment for the railroad and the transcontinental air lines."

Answer: The following companies manufacture air-conditioning equipment for railroad cars:

American Car & Foundry Co.
30 Church St., New York City
General Electric Co.
Schenectady, N. Y.
General Refrigeration Sales Co.
Beloit, Wis.
North American Car Corp.
327 S. LaSalle St., Chicago, Ill.
Safety Car Heating & Lighting Co.
New Haven, Conn.
Waukesha Motor Co.
Waukesha, Wis.
York Ice Machinery Corp.
York, Pa.

Special air-conditioning equipment for airliners is manufactured by General Refrigeration Sales Co., Beloit, Wis., and by Carrier Corp., Newark, N. J.

B & B Controls

No. 3107 (Refrigeration Service Firm)—"Could you tell me where the B. B. Control Co. is located? I have several of these controls in for repair but as yet have been unable to locate the company."

Answer: We believe that the B & B Co. is Bishop and Babcock Sales Co., 4901 Hamilton Ave., N. E., Cleveland, Ohio.

You can get definite information by writing directly to them.

Air-Conditioning Manufacturers List

No. 3108 (Manufacturer, Ohio)—"I would like to have a list of companies manufacturing individual room air-conditioning units, and also a list of companies manufacturing air-conditioning units for entire homes."

Answer: An up-to-date list of summer air-conditioning equipment, parts, materials, and supplies was published in the "Comfort Cooling Guide," a supplement to the June 23 issue of AIR CONDITIONING AND REFRIGERATION NEWS. Copies of this issue are obtainable for 20 cents per copy.

Lien on Refrigerators

No. 3109 (Distributor, New York)—"Several months ago, in one of the issues of AIR CONDITIONING AND REFRIGERATION NEWS, there was an article relating to a law in a few states which permits a landlord to secure a lien on commercial refrigeration equipment for the payment of a debt due him, even though the equipment was covered by a conditional sales contract and properly recorded. As I recall, there were only two or three states where such a lien could be secured and that a landlord's waiver was not necessary in New York state."

My copy of the issue which treated on the subject has been mislaid and if you have two or three copies, I should like to secure same; if this is impossible, your brief interpretation of the article in question would be appreciated."

Answer: We believe that you are referring to the "Digest of Title Retaining and Personal Property Lien Instruments Used in the United States for Retail Instalment Sales," which was published in the Dec. 25, 1935, issue of REFRIGERATION NEWS.

Icebox Manufacturers

No. 3110 (Manufacturer, Pennsylvania)—"Will you please advise the addresses of the following refrigerator manufacturers:
Hammond—Crystal Refrigerator Co.
Olympic—Ward Refrigerator & Mfg. Co.
Progress—Progress Refrigerator Co.
Duo-Draft—McKee Refrigerator Co.
Klondike—The Maine Mfg. Co.
White Seal—Tennessee Furniture Corp.
Econom-icer—Ranney Refrigerator Co.
Vitalaire—Ice Cooling Appliance Corp.
and also names of other manufacturers."

Answer: Their addresses are as follows:

Crystal Refrigerator Co.
850 W. 4th St., Fremont, Nebr.
Ward Refrigerator & Mfg. Co.
6501 S. Alameda St., Los Angeles, Calif.
Progress Refrigerator Co.
1213 Maple St., Louisville, Ky.
McKee Refrigerator Co.
Cobleskill, N. Y.
The Maine Mfg. Co.
46 Bridge St., Nashua, N. H.
Tennessee Furniture Corp.
Chattanooga, Tenn.
Ranney Refrigerator Co.
Greenville, Mich.
Ice Cooling Appliance Corp.
610 W. Wall St., Morrison, Ill.

The above manufacturers are manufacturers of ice refrigerators and not electric refrigerators. For information on additional manufacturers of ice refrigerators, write to the National Association of Ice Industries, 228 N. LaSalle St., Chicago, Ill.

Refrigerant Charging Boards

No. 3111 (Dealer, Algeria)—"We would appreciate it if you could communicate with one or two manufacturers in the United States, which are without any doubt subscribers of your paper, who manufacture charging board for Freon-12 and SO₂ asking them to send me their best price catalogs or blue prints and deliveries."

Answer: Charging boards for Freon and sulphur dioxide are manufactured by Kerotest Mfg. Co., Pittsburgh, Pa.

Kerosene Refrigerators

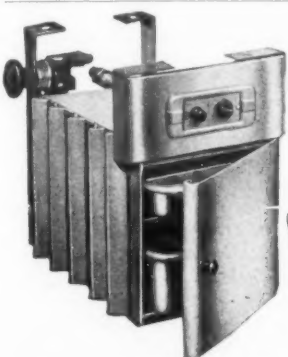
No. 3112 (Dealer, Gold Coast, West Africa)—"Please send me the name and address of the manufacturers of the 'Hallstrom' unit referred to on page 8 of your issue of May 27, 1936. I shall be much obliged if in order to save time you will also put me direct into touch with the manufacturers of this unit."

"I am interested in a kerosene-operated refrigerator suitable for sale in the Gold Coast. Please put me into touch with two American manufacturers of reliable kerosene-operated refrigerators, with moderate kerosene consumption."

Answer: The Hallstrom refrigerator is manufactured by Hallstrom, Ltd., 462 Willoughby Road, Willoughby, Sydney, N.S.W., Australia.

Principal makes of American made kerosene-operated refrigerators are the Electrolux, made by the Electrolux Refrigerator Division of Servel, Inc., Evansville, Ind.; the Superflex, made by Perfection Stove Co., 7609 Platt Ave., Cleveland, Ohio; the Gibson made by Gibson Electric Refrigerator Corp., Greenville, Mich.; the Crosley, made by the Crosley Radio Corp., Cincinnati, Ohio; and one made by the Allene Refrigerator Corp. c/o Cleveland Tractor Corp., East 193rd St., Cleveland, Ohio.

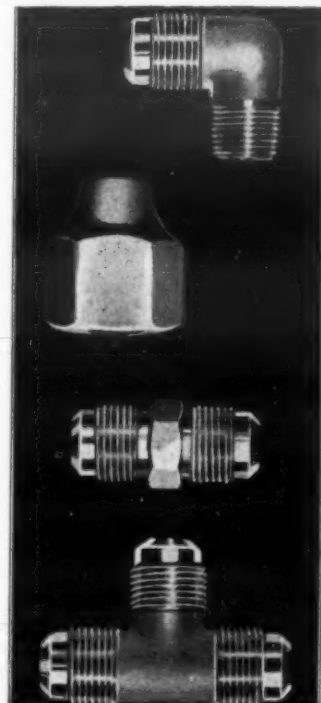
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STANDARD FAST-ICE EVAPORATORS
All copper and brass construction. Continuous 3/4" copper tubing metallically bonded above and beneath each tray. Side flanges riveted to sleeves. Silver satin finish. A consistently superior product.
Write for price and specifications
Bulletin No. 101
STANDARD REFRIGERATION CO.
Chicago, Ill.
9 So. Clinton St.

QUICK SERVICE **PARTS · SUPPLIES · TOOLS**
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DEPENDABLE ITEMS FOR ALL YOUR NEEDS
Save Money and Time—Our Complete Stock Assures Prompt Service.
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WRITE TODAY for NEW CATALOG

Puro
ELECTRIC WATER COOLERS
Thoroughly reinforced all steel attractively finished cabinets.
Complete line of different Models and Capacities.
Write for details and sales prices.
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440 Lafayette Street, New York City Spring 7-1800



Seepage-Proof FITTINGS

"Built Right to Stay Tight"

Every style and size of forged flared tube fitting for the refrigeration industry is available from standard stock at Commonwealth.

Thousands of semi-standard patterns enable us to quickly furnish any desired variation in pipe and tube ends.

Special fittings made to order.

Commonwealth fittings are correctly designed, carefully machined, and tube seats are protected in shipping.

25 years of service to the industry.

COMMONWEALTH BRASS CORPORATION

Commonwealth at Grand Trunk R. R.
DETROIT, MICH.

THE BUYER'S GUIDE

The Only MAJESTIC
Service Anywhere in the World
Original and Genuine
Direct Factory Service
BEWARE OF IMITATION REPLACEMENT PARTS AND UNITS.
OUR REBUILT UNITS ARE GUARANTEED 18 MONTHS GENUINE MAJESTIC REFRIGERATOR AND RADIO PARTS SERVICE
G & G
FACTORY & GENERAL OFFICES: 5801 DICKENS AVE. . . CHICAGO, ILL.

It's NEW! **HARRY ALTER'S**
1937 catalog of Air Conditioning and Refrigeration Parts and Supplies.
Write on your letterhead. We protect the dealer.
HARRY ALTER COMPANY
1728 S. Michigan Ave., Chicago
BRANCHES: NEW YORK · ST. LOUIS · CLEVELAND

Year in year out Profits

Every time you sell a Cordley Cooler, you make a generous profit . . . a profit not dissipated in future service expense . . . a profit that sticks. Cordley Coolers are sturdily built, simple mechanically and designed solely and specifically for water cooling service . . . by the pioneer and oldest manufacturer of water cooling equipment. **CORDLEY & HAYES, 141 Hudson St., New York City.**

CORDLEY Electric WATER COOLERS

Absolutely TIGHT CONNECTIONS with these fittings

THE success of any refrigeration or air conditioning system is absolutely dependent upon tight connections.

Imperial fittings in both S. A. E. flared types and solder fittings have been especially designed for refrigeration work—they are not a worked over line of automobile couplings. You can feel certain that they will remain tight throughout the entire life of the installation.

IMPERIAL BRASS MFG. CO.
565 S. Racine Ave., Chicago, Ill.



S. A. E. FLARED FITTINGS
Nuts, tees, elbows and crosses are made from brass forgings and will not crack or split. These fittings are heavier and stronger than the standard S. A. E. fittings and are non-porous, eliminating seepage and season cracking. Tees and elbows have flats for wrench. Imperial fittings are furnished in a complete variety of types and sizes for every need.



SOLDER FITTINGS
Imperial solder fittings (licensed under Streamline patents) assure an absolutely tight connection that is actually stronger than the tube itself. It is lighter, simpler and more quickly fitted than conventional fittings. No flaring required. Imperial solder fittings are forged except some types which are also furnished in wrought. Broad range of elbows, tees, return bends and other fittings for tube diameters from 1/4" to 2 1/2".

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HENRY Small Strainer

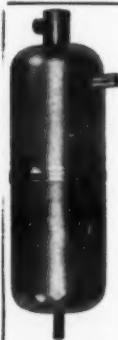
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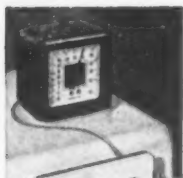
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DAYTON, OHIO
WORLD'S LARGEST MANUFACTURER OF V-BELTS

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V-BELTS

Sales Engineers Are Backbone Of Merchandising Setup Of the Frick Co.

BY F. O. JORDAN

WAYNESBORO, Pa.—The Frick Co. is one of the oldtimers in the refrigeration industry, just as the Frick family is among the oldest settlers here in Waynesboro.

When the Fricks moved into what is now the old homestead nearby, the United States of America was an infant in the world's family of nations, being only a trifle more than half a hundred years old.

One of the first things that father Abraham Frick did after settling in this promised land was to dam the "crick" so that it had to operate a handmade water wheel, which pumped water from a well some distance away by means of an overhead chain drive. This water was piped through the Frick house and the Frick barn, so that the Frick family and cattle enjoyed a degree of modern convenience practically unheard of in that bygone day.

EARLY ENGINES

Profiting by his paternal example, son George Frick became a millwright who did a thriving business keeping the 75-odd local water-powered grist mills grinding their respective grists; he displayed his inventive genius by designing and constructing new-fangled water wheels and even built with his own hands at the age of 24 years the first steam engine which he ever had seen.

It is recorded that this pioneer then wedded Miss Frederica Oppenlander and that new husband, new wife and new engine all lived happily

under the guidance of the Frick family, until this day.)

The present Frick Co. is divided into two separate departments, each with its own executives. These divisions are the ice and refrigeration machinery department, and the farm machinery department.

CONTRACTORS TO FORE

Basically, Frick Co. follows the belief that air conditioning in the future will be done more and more by local contractors, just as the heating and plumbing industries have found that the job is done better by this method. Frick Co. has, therefore, placed itself in position to supply all the mechanical equipment required (much of which is made in its own factory) to carefully selected and well set-up organizations, capable of engineering and installing on the ground the complete air-conditioning plant.

The installations are always made with the guidance of Frick engineers, and are based on the experience and research which the company has accumulated through so many years.

DISTRIBUTION SYSTEM

The Frick distributing organization may be briefly described as follows:

1. Direct Factory Branches, located in about two dozen key cities. These branch offices are generally responsible for results, with equipment of all sizes and types, in their respective territories.

2. Sales Representatives, located

Another in the 'Who's Who' in the Industry Series

In this article—one of a series by Air Conditioning Editor Jordan dealing with the background and methods of some of the major air-conditioning and refrigeration manufacturing firms—the story of the Frick Co. is told, not only in terms of what it makes and how the company makes it, but the broader story of how the company trains its men and distributes its product.

together under one and the same roof. Then George Frick went into the engine building business seriously, and it is said that some of the products of this activity yet are faithfully carrying their loads back here among the hills even to this day.

After a period of some years during which George Frick manufactured engines and boilers for sawmills, gristmills, threshing machines, tractors, etc., he concentrated his activities in a new plant in Waynesboro, which since has grown steadily into its present proportions.

REFRIGERATION PIONEER

Long-time builders of both slide-valve and Corliss engines, threshing equipment, and other machinery, the Frick Co. was one of the first to recognize the possibilities of refrigeration and to become active in this great industry.

Having successfully converted a vertical engine into an ammonia compressor in 1882, the firm in 1883 constructed the first complete Frick refrigerating machine. This was a slow-speed-driven model of 25-ton refrigerating effect. By 1887 units as large as 150 tons had been built and sold. One unit of the vintage of 1886 was in reserve service until a few months ago, and several of the machines installed in the later eighties are still in active use.

The upright "A"-frame Corliss-engine-driven heavy-duty refrigerating compressor, designed for Frick by Edgar Penney in 1884, will be remembered as the standard of the industry up until about the time of World War. It is interesting to note that while the heavy-duty slow-speed machines of that period operated at 55 to 75 r.p.m., the modern Freon compressor of small size generally operates in excess of 500 r.p.m.

'FRICK-ISMS'

Typical George Frick-isms: "Be sure you are right, than do it quickly." and "Never over-represent the product and always give full measure, or more than is promised!" (The company always has remained

strictly "sales engineers" in the fullest sense of the word, for they are required to make their own sales contacts, job surveys, load estimates, and equipment selections, as well as to do much of the engineering design and layout work which is required in connection with all projects upon which they are working.

All such estimates and design work are then submitted to the staff of field engineering specialists at the factory for check and approval, and duplicates are filed away in vaults provided for that purpose for safe-keeping and future reference.

TRAINING RECRUITS

New sales engineers are carefully selected from among the graduating classes of approved engineering colleges or universities, and are given a thorough three or four-year course of training in Frick methods and equipment. During this training period, these students are said to be given the equivalent of a second college course in refrigeration practice.

Beginning with practical training, consisting of one month in each of the six main departments of the shop, nine months on the road at field construction work, and nine months in the engineering department, the student has one to two years or more in the central estimating and sales departments at the factory. This thorough and extensive training course is given for the purpose of insuring satisfactory operation of the equipment sold, as well as the use of uniform and effective methods of procedure in engineering and field work.

During the training period, the men who are being trained are paid a good living wage, and this is increased at regular intervals during the first two years, so that they make their living in addition to being trained for their chosen profession.

After the training period is completed, and the student is adjudged to have attained a satisfactory degree of proficiency, he becomes a sales engineer, or else joins the central staff of engineering specialists who operate from factory headquarters, depending upon his own bent or preference.

TRAINING STRESSED

Great importance is placed upon their training course by the Frick management, because it is a way of overcoming the existing shortage of refrigerating and air-conditioning engineers with sufficient training to avoid costly mistakes in field engineering and insure economical and effective installations.

In fact, so much stress is placed upon the importance of thorough training in Frick methods, that it is said that nearly all salesmen and company executives in general have taken this course of training.

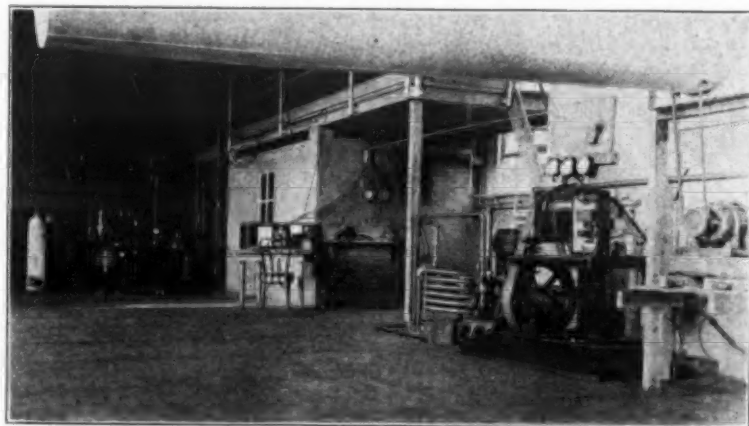
With respect to the value of previous training which the student may have had before entering the Frick organization, it was stated that the training time and expense required per student in the Frick training school is materially lessened if the student already has been thoroughly grounded in fundamentals and practices.

NO SHORT CUTS

Since Frick refrigerating and air-conditioning activities are limited largely to commercial or medium and large installations which are tailor-made jobs and so do not lend themselves to mass production or package merchandising methods, all

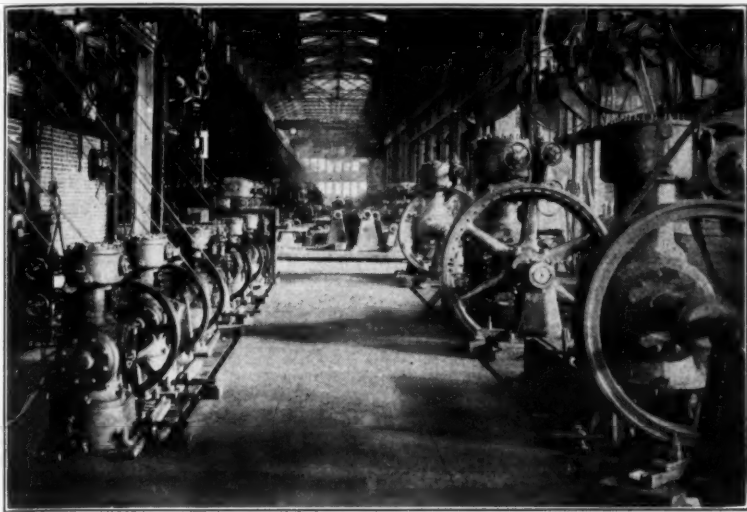
(Concluded on Page 19, Column 5)

Where the New Designs are Conceived



A part of the Frick development and research laboratory, in which plans for new Frick equipment are developed and tested.

On the 'Line' at the Frick Plant



A view looking down the line in the "erecting shop," as Frick production men term that part of the Waynesboro, Pa. plant in which the compressors are built.

All Factory-Handled Frick Installations Engineered to Customer's Needs

(Concluded from Page 18, Column 5)
load estimates are made via complete "longhand" engineering methods, little reliance being placed upon shortcut or tabulated estimating methods.

With the problem of locating prospective customers for smaller sized work Frick is not directly concerned, because this company generally sells its medium and small refrigerating equipment to its distributors and contractors, or to other units of the industry who sell the air-conditioning or commercial refrigeration installations. Larger plants are of course sold by the firm's branch office men, direct to the trade. The company's advertising is arranged to cover the needs of both its branch and distributors.

In the case of very large installations, and in all cases where desired by the purchaser, Frick furnishes its own construction crew, including pipe fitters. On other jobs, if complete installation is not required by the buyer, an erecting engineer is sent to direct the work. He brings with him the necessary special erection tools and apparatus, which are rented out to the concern that is taking care of the installation work. For such services, suitable charges are made.

DESIGN AND FABRICATION

In general, the process of design and fabrication of the machines is carried out as follows:

First, a preliminary design is made, based upon principles which have been discovered and proven by research and by Frick experience.

Next, an experimental model is built and then tested in the laboratory under simulated field conditions, and such changes are made as necessary to result in satisfactory performance. In this way faults are corrected and satisfactory performance is insured before equipment is sent into the field, so that the customer is not given the questionable honor of serving as a proving ground for untried products.

Not until after it has been proven by actual tests to be satisfactory, is the new model released for production, and actual shop drawings made which are based upon the findings of the laboratory.

Production patterns, jigs, and special tools are then made in the extensive departments devoted to such work. Patterns for discontinued models are stored in a large building, so that castings may be made readily for replacement of parts which may be broken in service, regardless of the vintage of the equipment.

Castings are made in Frick's own foundry. After being thoroughly cleaned of core sand, scale and other abrasives, the castings are laid out for machining and started through the machine shops. Cylinder blocks are bored out by special machines; the boring tools for larger compressors are supported at both ends to insure accuracy.

Cylinder surfaces are then honed, and all bearing surfaces are ground to glass-like smoothness. A unique honing machine, said to be the largest of its kind in the world, was constructed in the Frick shops to permit polishing the cylinders of even the largest machines while in a vertical position.

Very small parts generally are made by automatic machines. Babbitt bearing liners are made by a special process in which the molten tin alloy is forced under a pressure of 300 pounds per square inch into metal moulds, which are kept at a predetermined temperature by forced circulation of chilled water; the combination of pressure and quick chilling of the liner results in a case-hardening effect, which insures durability.

The interior surfaces of Freon-12 compressor castings which are not machined are coated with a metallic paint. All parts are inspected and checked for accuracy by precision instruments, and for proper hardness by Rockwell hardness testers. After this, the complete machines are assembled and put through a wearing-in test period.

Next, the machines are disassembled and all parts are cleaned and inspected. After this final operation the units are reassembled, run a short time, greased, openings plugged, and crated ready for shipping.

Condensers and tubing are welded, fabricated, and assembled in extensive separate shops.

INTERESTING APPLICATIONS

In addition to air conditioning, some interesting applications of Frick refrigerating equipment were given as follows:

Private refrigerated storages for fruit growers, where the total cost, including refrigerating equipment, wire, installation, piping, power, etc., was figured to be about one half (11 cents to 12 cents per bushel per season) of the cost to the grower for storing his fruit in public storage.

Private storage houses for farmers in general is believed to be a market of great promise because refrigeration allows the farmer to hold his produce for the best prices, and because his annual cost for private storage is much less than the cost of hauling and comparable storage in a distant plant.

Quick-hardening of ice cream by passing the product upon a conveyor (at one foot linear travel per minute) through a tunnel in which the temperature is held at -35° to -45° F. This temperature is maintained by a combination of low pressure and higher pressure compressors working in series.

With this arrangement a compressor which is constructed for Freon-12 service (with the stuffing box kept under pressure) operates at the low suction pressure and discharges to the 20-pound suction pressure of a conventional ammonia compressor. This further compresses the gas and discharges it into the condenser after the conventional manner. The arrangement is declared to reduce first costs as much as 50% and to result in 25% to 35% reductions in power costs.

Pottsville, Pa. Dealer Sponsors Kelvin Model Home

POTTSVILLE, Pa.—Biehl's Inc., Kelvinator residential air-conditioning distributor, is sponsoring construction of a Kelvin home here. Schneider & Davis has been awarded the general contract. Gordon Biehl is president of the distributorship.

Airtemp Conditions Union Pacific's Omaha Bldg.

OMAHA — The 12-story Union Pacific Railroad Co.'s headquarters building in this city is being equipped with an Airtemp air-conditioning system, first major midwestern job using the company's new radial compressor.

The installation, one of the largest of its kind in this section, will have a capacity of 825 tons, and provide air conditioning for 3,600,000 cu. ft. of building space housing approximately 2,000 employees.

Approximately 90,000 c.f.m. of outside air will be drawn into the building to be cooled, filtered, dehumidified, and circulated by the air-conditioning equipment. The plant is being designed to maintain correct temperature and humidity up to a capacity of 3,000 persons.

Improved working conditions for the Union Pacific's employees and greater protection against illness is expected to justify the air-conditioning investment, according to W. M. Jeffers, executive vice president of the company.

Carrier & Airtemp Lead Birmingham List

BIRMINGHAM, Ala.—With 11 installations each to their credit, Carrier and Airtemp share top position for the number of air-conditioning systems installed here during the first six months of 1937. Westinghouse, with six installations, is third. Two installations each by York, Frick, Howe, and Trane-Curtis round out the total for this period.

Biggest installation made, a 587-hp. system, was handled by York. Carrier installed the 367-hp. Kress store system, and sold most of the other larger systems, records show. Airtemp specialized on smaller installations.

Five room cooler unit sales brought the total air-conditioning installations during the six months to 42, with a 1531-hp. load.

Delco-Frigidaire System In New Seattle Home

SEATTLE, Wash.—A Delco-Conditionair air-conditioning system was installed in the new tri-level home for Puget Mill, in Sheridan Beach, Seattle suburb. The home was opened recently for public inspection.

C. F. Massart, plumbing and heating company here, installed the Delco-Conditionair system in the new home.

Arizona Dam Project to Have Cooled Buildings

PHOENIX, Ariz.—Air Conditioning Engineers, Inc. here has been awarded a \$12,218 contract by the United States Bureau of Reclamation to install an air-conditioning, heating, and ventilating system in the office building and two dormitories being constructed at the government camp at Friant Dam, site of the Central Valley water project just undertaken in interior California.

2,000 Hp. Added to Northern States Lines in 5 Months

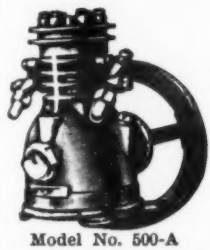
MINNEAPOLIS — Installation of more than 2,000 hp. of air conditioning in its territory from January to May inclusive is reported by Northern States Power Co. Many large office buildings, department stores, and smaller merchants are installing air-conditioning equipment, the report said.

Air-Conditioned All-Gas Home Opened in Wichita

WICHITA, Kan.—Gas Service Co., Ketzler Sheet Metal Co. and Johnson Furnace Co. were among cooperating firms that constructed the air-conditioned all-gas model home at 20 Cypress Drive here. Kitchen appliances include an Electrolux refrigerator.

THE BUYER'S GUIDE

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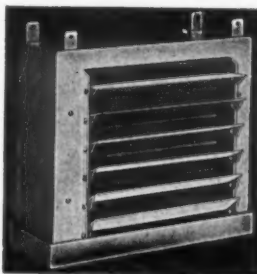
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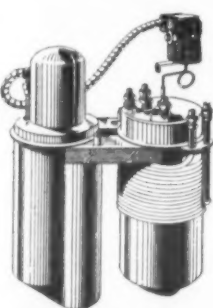


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